VIRTUAL LEARNING “ENVIRONMENTS” FOR NOMADIC CHILDREN
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ABSTRACT
The wandering nature of the nomadic people has had a “damaging” effect on the education and development of their children. Added to this is the reality that the children often accompany their parents on their daily business...consequently leading to their picking up the profession. Many a governmental and non-governmental body has tried to find a solution by either (a) setting up boarding schools for the children in strategic locations or (b) placing permanent teachers in the camps. However, there is a basic problem with the solutions in that the good teachers invariably do not opt for such assignments because of the pay and/or location.

Is there a panacea? Yes, it lies in providing the best of teaching uniformly across all camps (of course providing for language variations). It is here that virtual learning environments can help.

The Education Team in KReSIT, IIT-Bombay has designed and developed a series of virtual environments that are available on a laptop computer. These virtual environments simulate a nomadic environment and provide opportunities for the learner to (a) segregate entities, (b) arrange entities as per height/colour/type/usage, (c) measure the heights and weights of children, (d) add, subtract and find averages and (e) correlating knowledge with the real world around. The flexibility of the “virtual” environments makes it possible to continue anywhere and extend the learning to possible extensions and value additions.

1 The Nomads
Ananthakrishnan and Ramamritham (Beijing) have highlighted the various factors that influence nomadic life and analysed those that inhibit the children from getting educated. These include, according to the nomadic tribes:
   a) "Of what value is education to us?"
   b) “Will education lift us from a down-trodden society to one in the higher echelons?”
   c) “Will we be able to significantly contribute to the national economy?”

In the light of the above, it is a futile exercise to get the children to go through the traditional 10+2 school curriculum, a system followed by the various states in India. So then, what else? Can a general real-life based curriculum designed to make them comfortable with the 3Rs (Reading, Writing and Arithmetic) serve the long-term needs of the children?

An element of doubt still remains! Can we keep the children engrossed for long...with the traditional methods of classroom teaching...full of monologues, dreary teaching and sedentary styles? No, especially when the audiences look for the earliest opportunity to “bunk” the class.

2 Role of governmental and non-governmental agencies
Many governmental and non-governmental bodies have tried to find a solution by either (a) setting up boarding schools for the children in strategic locations or (b) placing permanent teachers in the camps. But, these have had a limited success. Why? The reasons are obvious viz.,
a) Good teachers would never volunteer to work in the nomad schools or help in nomad camps
b) Children would invariably try to escape /run away from the school and try to get back to their camps
c) The school infrastructure would be one of minimum configuration…one that might not motivate the children
d) The large number of languages (spoken-cum-written and dialects) in India

3 Mediated Instruction
The scenarios described in the earlier sections leave one looking for viable solutions, solutions that are workable and affordable. One needs solutions that could provide quality and homogeneous education across board. It is here that mediated instruction could be a possible intervention.

The Technology Committee Report (1996-97) of the Academic Senate for California Community Colleges lists out the factors that could be successfully “mediated” viz., Information transfer, appropriate context, active participation, early feedback, mentoring, use of quality time, meeting expectations and regular monitoring.

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4 Virtual Environments
What drives Virtual learning? Kanna traces the history of virtual learning in the US from 1929 to the present day where “the United States is fuelled by a technology rich society, a motivated and literate population of parents, and visionaries in education, technology and business…..Virtual access gives children online curriculum opportunities like travelling with Robert Ballard…and visiting remote locations around the world…”

Can virtual schools cater to one and all? Like brick-n-mortar schools, these schools also follow a curriculum, have teachers, standard lessons, periodic tests and final assessments. But then, why go to virtual schools? Because, some parents feel that their wards get the best of both worlds: flexibility and individualised instruction!

Virtual worlds are, however, not free of problems, technological and social; technological in terms of hardware, software and intelligentsia and social in terms of philosophy, psychology and subject-content. The nomadic child, therefore, needs to make the best of both worlds. The current paper will describe the three-stage approach to creating virtual worlds for the nomadic child.

5 The R³ Cycle of Continuous Learning
The R³ cycle stands for the Real-Replay-Recreate cycle of gathering knowledge and augmenting it with the passage of time and opportunities. It is also the very process followed by the authors in implementing the pedagogy for the nomadic children. The cycle is shown in Figure 1. The child, in the centre, moves in a sequence from “Real” to “Recreate” through the “Replay” and repeats the cycle, each time picking up some new information from the real world and ultimately trying to recreate it in his “home” environment. Logically this cycle leads to continuous enrichment of knowledge and wisdom. Needless to say, this is what an ideal pedagogy should do.
6 The Virtual Learning Environment (VLE)

The “Recreated world” constitutes the Virtual Learning Environment in the current study. It would not be out of place to briefly describe the first two “worlds” in order to complete the “equivalence” of the R³ model vis-à-vis the nomadic children.

The “real” world:
This is the environment in which the nomadic children live, with the environment providing everything from words, numbers and colours to shapes and common objects.

The children explored the “real” world with the facilitator taking the children around the camp and assisting them in exploring and identifying the various objects, people, creatures and buildings/habitats. These included:

- charts and pictures: identification, counting, colour matching, grouping
- Persons and living beings: Friends, parents, relatives, goats, bulls, poultry
- Buildings/habitats: Neighbourhood, tents and their parts, trees and shrubs, fuel

The “replay world”
This world is the one generated by video-recording the sequence in which the children went around in the environment (real world).

The “replay” mode had a cascading effect in that it

- created a sense of surprise with the children seeing themselves in feedback, and
- helped the children looking at their own environment with a more discerning eye
- opened up an entirely new world (for children from environments totally divorced from the one that was “recorded”)

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7 The Design & Development of the VLE

The principal virtual learning environments that were designed and developed by the authors are shown in Table 1.

<table>
<thead>
<tr>
<th>The VLE</th>
<th>Expected Action /Interaction</th>
<th>Concept (to be learnt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children arranged in a line</td>
<td>Separate boys and girls</td>
<td>Sorting</td>
</tr>
<tr>
<td></td>
<td>Organise boys/girls as per heights</td>
<td>Organisation and arrangement</td>
</tr>
<tr>
<td></td>
<td>Organise the entire group of</td>
<td></td>
</tr>
<tr>
<td>Task</td>
<td>Action Description</td>
<td>Methodology/Media</td>
</tr>
<tr>
<td>------------------------------------</td>
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<tr>
<td>Finding the weight of children</td>
<td>Pick each child and place on the weighing balance</td>
<td>Discipline and methodology</td>
</tr>
<tr>
<td></td>
<td>Pick more than one child and place on the weighing balance</td>
<td>Addition, Subtraction</td>
</tr>
<tr>
<td>Finding the height of children</td>
<td>Pick each child and place on the stand</td>
<td>Discipline and methodology of measurement</td>
</tr>
<tr>
<td>Grouping objects</td>
<td>Picking objects and putting them under categories</td>
<td>Organisation and sorting</td>
</tr>
<tr>
<td>Matching colours and shapes</td>
<td>Drag and drop</td>
<td>Observation and pairing</td>
</tr>
<tr>
<td>Charts</td>
<td>Pointing on “object” called for</td>
<td>Identification</td>
</tr>
<tr>
<td>Virtual market</td>
<td>Picking up items in stated quantities and collecting in a basket</td>
<td>Identification of item(s), counting, addition and total cost</td>
</tr>
</tbody>
</table>

**Remarks:** Audio cues will be provided to direct the student on the expected action/interaction

8 Some illustrative examples of the VLE

(a) Sorting boys and girls from a heterogeneous group

(i) Unsorted

(ii) Sorted

Figure 1: Sorting : (i) Unsorted (ii) sorted

(b) Arranging children as per their heights (in decreasing order)

(i)

(ii)

Figure 2: Organising : (i) Unsorted (ii) sorted

(c) Finding weight of a child, two children (and addition/subtraction)
(d) Finding the height of a child

(e) Grouping fruits

(f) Matching colours/shapes

Implementation
The VLE was loaded on a laptop and made available to the nomadic children with all the necessary instructions on its effective usage. The children were trained only to use the forward/backward keys, and moving of the cursor followed by clicking. Experiments were carried out with the sorting and the children carried them out successfully. Periodic visits and interactions will be made out to see the effectiveness of the methodology. New lessons, as and when developed, will be additionally loaded on the laptop from time to time. This is to ensure that all the courseware is available 24/7, especially for the newcomers as well as the erratic attendees.