Instructional design models incorporating Information and Communication Technology (ICT) for wider access of learners to educational opportunities at the Open University of Sri Lanka (OUSL).

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Introduction

From its inception in 1980, in the Open University of Sri Lanka (OUSL) the fundamental mode of imparting instruction and learning methodology has been Open and Distance Learning (ODL). This is also reflected in the university's vision and mission statements:

> "Our vision is to be leader in Open and Distance learning, renowned for excellence, for human resource development and empowerment of people to achieve their full potential".

> "Our mission is to enhance opportunities for adult life- long learning of people by facilitating Open and Distance learning and supporting excellence in research and scholarship".

At present OUSL offers 40 formal programmes of study along with many short courses. Currently there are 24,869 learners from different parts of the island enrolled in programmes at the certificate level, foundation level, diploma level, undergraduate level and the post graduate level. The main method of imparting instruction and learning methodology incorporated into a set of well written course material according to approved guidelines for instructional design (House Style, OUSL 1997) supplemented by audio visual material which is issued to learners at registration to courses and programmes of study. In almost all programmes and courses there are 'day schools' or 'workshops' which may be compulsory or optional. These face-to-face components are mainly designed for learners to clarify difficulties in the course material. The main mode of communication with learners is the postal service.

Dependence on the postal services for information delivery and communication with learners can lead to delays in learner support activities of the University. While Day schools, although popular among the learners, cause severe constraints on the budgetary allocation of the university since they require extensive infrastructure and maintenance investments as well as audio/visual aids and other learning apparatus.

In Sri Lanka, access to publicly funded higher education is free but limited, due to lack of funding for conventional universities. For example, more than 70% of those students who qualify at the GCE 'Advanced' Levels for entry to the University in the science stream are not selected (University Statistics, 2006). Further there are many who drop out of the formal education system after their GCE "Advanced" Levels and require vocational training to gain employment. In the past decade there has been a tremendous global increase in the application and acceptance of ODL worldwide and it has now become a viable alternative to conventional teaching.

In view of the constraints in delivering courses and also in keeping with our mission to increase opportunities for lifelong learning at OUSL, the University decided to incorporate many aspects of information and communication technology into its process of course design, development and delivery - thereby providing increased access to learners.

The idea of designing and developing the OUSL Learning Management System (LMS) was triggered from some academic staff members who participated in the e-learning workshop conducted by the Commonwealth Educational Media Centre for Asia (CEMCA) in February 2003. At first, the Director, Information Technology Division (IT) who was one of the participants introduced the concept of the Virtual Classroom (VC) and a few academic members experimented with this innovative approach and started to use VC for content delivery and communication. At that time there was no formal system in place for course

development and quality assessment of web based courses or material. This was in major contrast to the House Style approved guidelines being used for printed instructional materials. This paper describes an OUSL endeavour in creating an effective design and development model and process, to efficiently deliver quality web-based instructional material.

Methodology

The instructional Design and Development (IDD) counterpart team of the OUSL Capacity Enhancement project (OUSL – CE) was involved in applying Information and Communication Technology (ICT) to instructional material from October, 2005. The OUSL – CE project is one of the three components of the Distance Education Modernization Project (DEMP) funded by the Asian Development Bank (ADB) loan 1999 –SRI (SF) and the Government of Sri Lanka. The primary goal of the OUSL – CE project, which also includes other components outside of instructional design, is to improve the efficiency and effectiveness of OUSL to increase student enrolment from 23,000 in 2003 to 46,000 in 2009.

The IDD counterpart team consisted of Instructional design specialists who served as consultants to the project, a group of academics from the four faculties of OUSL and academics from the Educational Technology (ET) Division of the OUSL. The Instructional Design and Development team (IDD) put forward a model to guide the implementation on a pilot scale. The model initially proposed is illustrated in figure 1
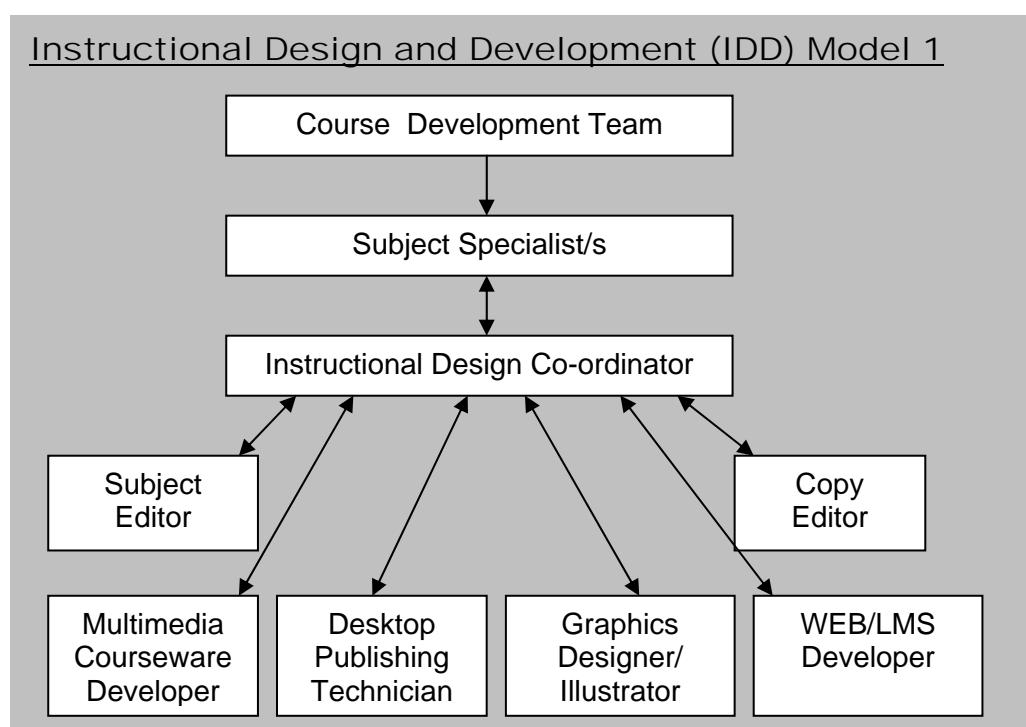

Instructional Design and Development (IDD) Model 1

Course Development Team

Subject Specialist/s

Instructional Design Co-ordinator

Subject Editor

Copy Editor

Multimedia Courseware Developer

Desktop Publishing Technician

Graphics Designer/ Illustrator

WEB/LMS Developer

Figure 1 – The First Instructional Design and Development Model

The major goals of this model were to incorporate ICT into instructional material to enhance self learning in course material and learner support. OUSL also wanted to aid in creation of a formal system within OUSL to develop online course material. Learners were to access the newly produced web-based courses via the National Online Distance Education Service (NODES), a network which is another arm of DEMP, Sri Lanka. The move to NODES would mean, in the future, the Virtual Classroom would eventually be retired since NODES was using Moodle, another open source LMS.

The Instructional Design Coordinator (IDC) position shown in model 1 was a new concept for OUSL, and was critical to the successful implementation of the model. IDC's have the unique task of dealing with 'ill-defined' problems in attempting to answer the question, "what is the best way to make the acquisition of knowledge and skill more efficient, effective and appealing manner in an online environment? This task required highly creative problem-solving and design work. IDC's were also expected to manage others involved in the course development process from design through to course delivery such as LMS developers,

graphic designers, and multimedia developers. Hence an IDC was recognized as a Facilitator, a Team leader, a Designer, Project Manager and an Evaluator for course transformation.

The implementation of this model from January 2006 involved the selection of four courses that were already available in print from the four different faculties of OUSL. The IDC, an academic from the faculty, together with the IDD counter part team identified others who served on the course development team. They included the subject specialist, LMS developers, copy editors and multimedia specialists who were all assigned to the project temporarily. The idea of forming a course development team was to implement the IDD model (Figure 1) and determine its feasibility of use at OUSL. All members of the course team including the academics, who were Instructional Design Coordinators, received hands on training in MOODLE, instructional design techniques and course design management.

Findings
As anticipated there was satisfactory progress in transforming the four pilot courses into a web- based format that was acceptable when evaluated against quality checklists and guides prepared by the Instructional design specialist of the OUSL –CE project. For instance, the course on "Parasites of man" from the Faculty of Natural Science was designed to include 15 weeks of study which included self study of course material in print, two optional day schools and supplemental online activities including   summaries of readings, animations, online assignment submission, interactive quizzes, forums.

Working on the four pilot courses also helped to identify some problems in the design and development of the online courses using Model 1. The process proved to be too long and inefficient resulting from, among other things, the extra demand on the academic selected as IDC. Many IDC's were developing courses that were not necessarily in the discipline they specialize in. Since they had to deliberate more closely with subjects specialists who were equally busy with academic activities, the transformation of content to web-based format was slow. Yet another drawback was that the IDC had to directly deal with multimedia developers, web LMS developers, etc. who were also reporting to three other IDC's so many times, project management issues occurred causing additional delays in course development.

To further complicate matters, the University Grants Commission (UGC) in Sri Lanka which governs all universities including the Open University does not recognize an IDC within the University cadre. This prevented the recruitment of an IDC on a permanent basis. As such the model required the appointment IDC on a temporary basis which proved to be a drawback due to the lack of ongoing management which the process needed.

The experience gained from piloting courses was beneficial in altering the instructional design model and process. Figure 2 shows the second, updated version which we are using today. The second model incorporates a few pivotal changes: (1) The assignment of a person from the Educational Technology Division to take on the role of quality assurance and project management for any courses being transferred to the online environment and (2) The introduction of three course-types, supplemental, blended and online plus.

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Instructional Design and Development Model 2

1. University Online Vision & Strategy

Faculty Instructional Design Coordinator is a Faculty resource person for these tasks.

2. Faculty – Online Development & Delivery Strategy

3. Online Course identified for development by Faculty Curriculum Development Team

4. A strategic decision may be made about course types by the University Management sections and then passed on to the team for delivery

5. Faculty Instructional Design Coordinator meets with Educational Technology/ID person and designated Course Instructional Designer to make preliminary IDDD decisions about a specific course. A course team is identified (members from both ET area & the Faculty) and roles specified; timelines are determined

Determine Online Course Type that best suits the course content, the students, and the future teacher. Or follow Faculty/University Strategic requirements (see #4)

To Supplemental Course Process Flow
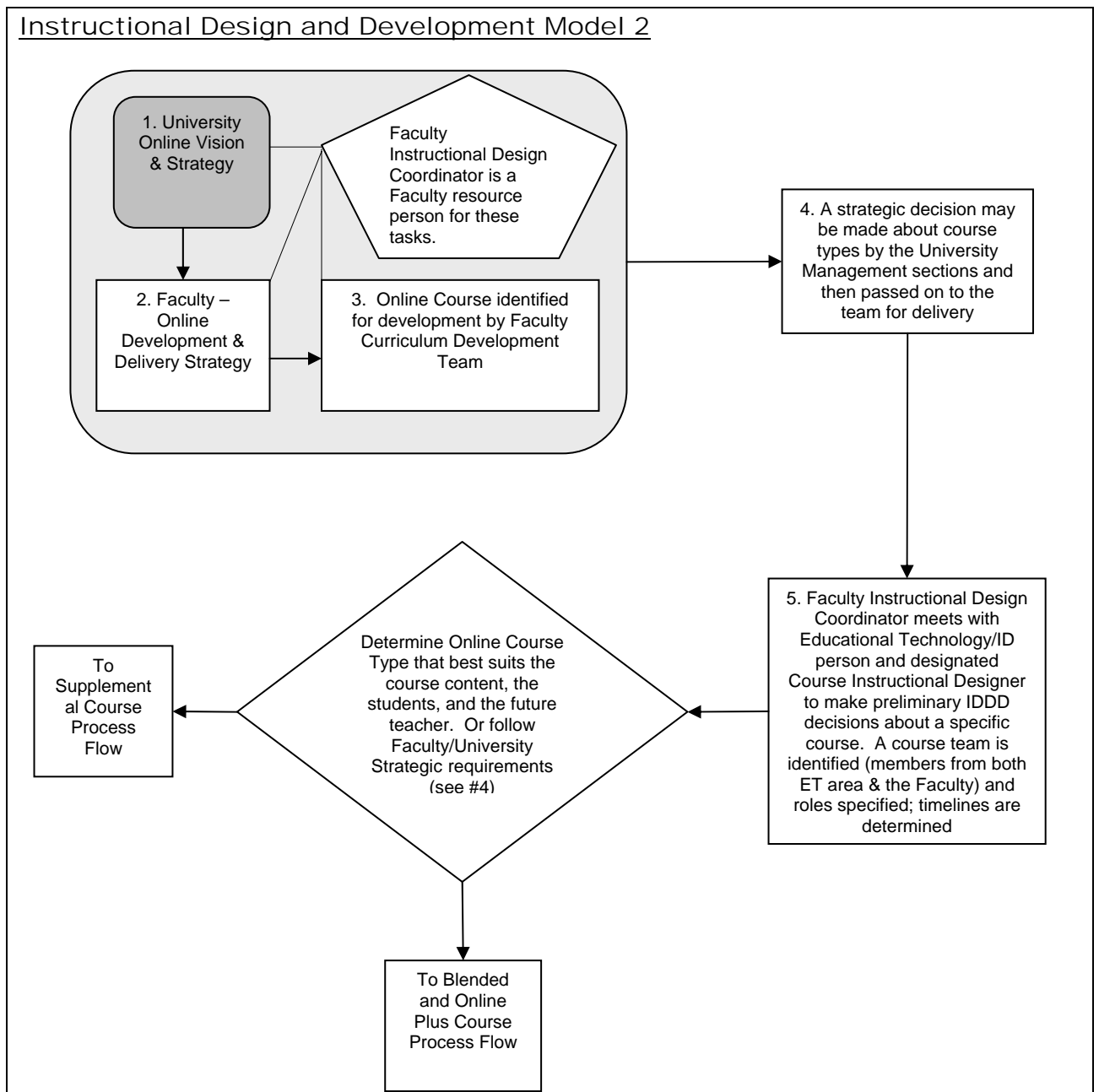
To Blended and Online Plus Course Process Flow

Figure 2 – Second Version of the Instructional Design and Development Model

Besides the identification of an Educational Technologist/Instructional Designer (ET/ID) from the Educational Technology Division, there is also recognition of up to three people from the Faculty: A Faculty Instructional Design Co-ordinator (FIDC) who manages the transfer of Faculty courses to the online environment; the Faculty member whose course is being transferred (Course Instructional Designer, CID); and it is highly recommended that an assistant Faculty Instructional Designer be assigned to the team as well – someone who may be responsible for a future online course and will therefore gain experience in the process. The FIDC, CID and ET/ID identify the course types and requirements of the course for the online environment, along with assigning roles to the course development committee that may include the subject specialists, Course Assistant Instructional Designers, web /LMS persons, multimedia developers, MOODLE administrators MOODLE content developers etc. The ET / ID is assigned the task of project management from design to delivery as well as the task of evaluating the online courses to ensure OUSL standards are met and maintained. The equivalent position to IDC in model 1, the Course Instructional Designer, does not have the task of managing course design and development on their own and is more focused on course learning activities for the online environment.

The second key feature of Model 2 is the introduction of Course-Types for the OUSL online courses. At present OUSL has identified three types of online courses: Supplemental Online courses, Blended online courses and Online plus courses, with each having a set development guidelines. Table 1 summarizes the features of the three online course types. The ET/ID advises the faculty course development team members on course-type selection to suit their requirements in the delivery of courses. The ET/ID also works together with the rest of the course team to plan, design and develop web based instructional material for online delivery.

Table 1 : Web-based course types for online delivery

Features	Supplemental	Blended	Online Plus
Students need access to online courses to be successful	N	N or Y	Y
Educational Technology is used extensively to assist with the comprehension of course concepts and terms	N	Perhaps but not necessary	Y
Students submit most work online	N	N	Y
Day Schools offered is drastically reduced due to the online course content	N	N	Y
Online student to student interaction is a required part of the course	N	Perhaps but not necessary	Y
Teacher communicates to students through online means	Perhaps but not necessary	Y	Y
Teacher provides feedback to students within online course	Perhaps but not necessary	Perhaps but not necessary	Y
What % of Assessed activities occur online or are based upon online content	0%	< 20%	> 20%
Number of students registered in course	Doesn't matter	Depends upon interactivities included in course	Maximum 50 & ideally ratio of 1 tutor to 30
Types of activities in your course – labs, practicals, (activities requiring f2f interaction) etc.	Y	Y	Rarely

The Educational Technology Division of OUSL has taken a strong leadership role in coordinating the development of Web based instructional material and ensuring its movement through the development process. Prior to ET's involvement, the extent of the OUSL web-based instructional delivery was reflected in the 4 pilot courses and the virtual classes developed on the Manhattan LMS. Figure 3 and Table 2 illustrates the course transfers to online which occurred, once the refined process and model was activated where ET/ID provides support and management to the Faculty Instructional Design Co-ordinator and Course Instructional Designers while the three new course-type structures encourages involvement from all Faculty members, no matter their instructional design skill level.
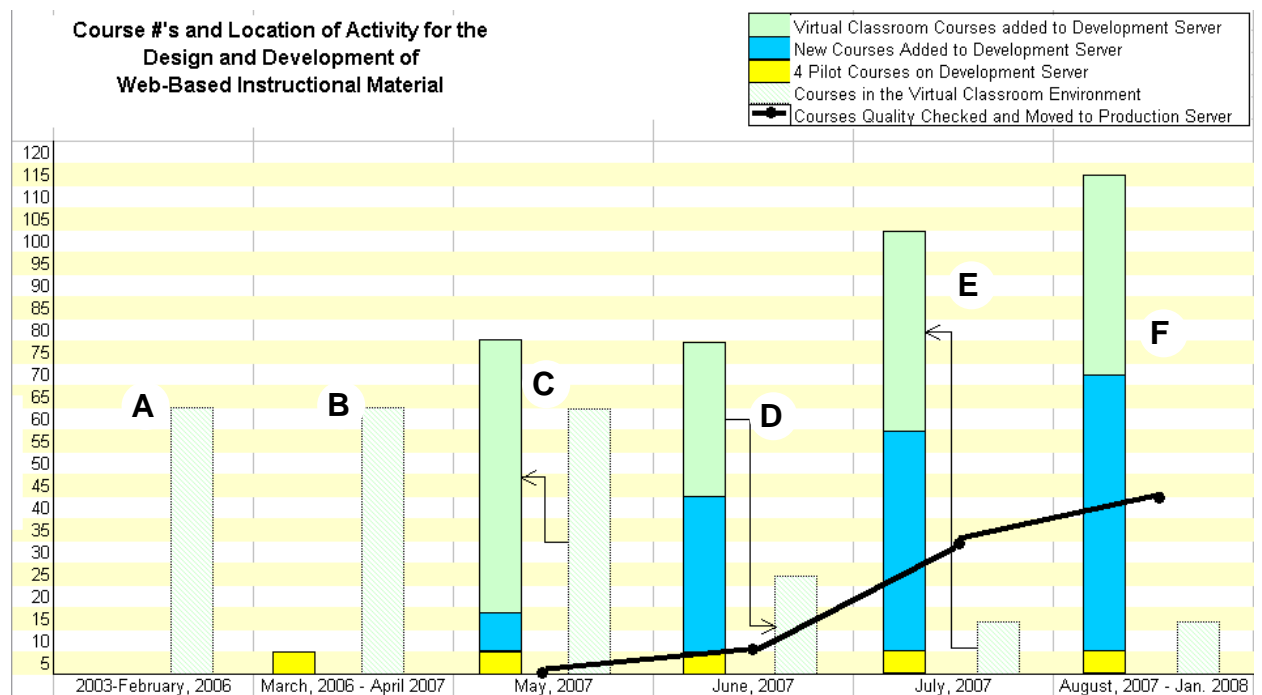
Figure 3: Timeline and Activity for Design and Development of Web-Based Instructional Material

The new process clearly delineated between the "Development" server where courses are being developed and assessed for quality and the "Production Server" where quality-certified courses are accessed by students. The ET/ID is the gate-keeper to ensure only quality-checked courses are transferred to the Production Server for student access.

Table 2: Timeline and Activity Explanations

	Date	Explanation
A	2003 – February 2006	• OUSL is involved in Online Course Delivery through an uncontrolled manner using the Virtual Classroom LMS. • Limited support is provided by the IT Department
B	March 2006 – April 2007	• Virtual Classroom is still in use, the domain of 'early adopter' faculty. • 4 Pilot courses are introduced to test IDD Model 1
C	May, 2007	• IDD Model 2 launched • OUSL commits to retire Virtual Classroom so all VC courses (60 total) are categorized as "Supplemental" course types and moved to Development server for review (quality and life-check as there was a feeling some courses in the VC were inactive) • Faculty awareness sessions and training leads to 8 new supplemental courses started on the Development server • One of the Pilot courses is completed, reviewed and moved to Production Server. • ET Division offers support, project management and quality checks. • IT Division provides technical support for Moodle.
D	June, 2007	• A re-shuffling of VC courses occur where inactive courses are moved back to the VC environment for retirement (23 courses). • 27 new courses added to Development Server (none are from VC). • 6 courses get quality-checked and are cleared to be moved to the Production Server
E	July, 2007	• 12 courses originally thought to be inactive in the Virtual Classroom environment are resurrected by Faculty members for a start within the Development Moodle server. • 16 additional new courses are added to the Development Server • 23 more courses are moved to the Production Server after passing the quality checks.
F	August 2007 – January 2008	• The Virtual Classroom LMS is scheduled for retirement • 12 additional new courses are added to the Development Server • 10 more courses are moved to the Production Server after passing the quality checks.

Conclusion
Model 2 proved to be a more efficient and sustainable model and, as shown in Figure 3, one that the Faculty readily accepted. By introducing the course types, there became an easy entrance point for Faculty who just wanted to give online 'a try'. Once the Faculty members gets comfortable offering a supplemental-type course, there are now well-defined processes to aid a Faculty member who decides to change their course to another course-type. Also, having the ET/ID person identified as the contact and support-person helped to maintain a flow to the process – thereby not allowing things to get bogged down in internal Faculty issues. Model 2 is more sustainable since the ET Division's knowledge base continues to grow and can be applied to future courses where as with Model 1, there was a good chance that the instructional design and project management skills would be lost when the IDC, a Faculty member, returned to their original position. The system inherent in Model 2 assumes that technical people will be hired on an "as needed" basis (depending upon the amount of course work flowing through the ET/ID area) while the quality control and systems people (ET/ID & FCID) are permanent within the model.

Model 2 definitely lessened the work of the CID, an academic, as s/he is no longer involved in course design and development management. Instead, it is the ET/ID, an academic staff person from the Educational Technology Division who drives the design and development. Because this person has specialized skills in "what makes good learning online" along with project management skills, the OUSL courses are being developed faster and at a higher quality This is essential for learners in Open and Distance Education as they are ensured online courses which meet a rigorous quality assurance program. It was significant for the project to identify three types of courses that suit the requirements of many programmes at OUSL. This process of identifying course types by using a multitude of requirement is beneficial to OUSL since the model allows the University to create student centred web based content and therefore reach out to every member of the community, thus providing education for all.

References
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