PRINCIPLES OF TEACHING

Minakshi Mishra
Sant Lal Sarwa

Principles of Teaching

Principles of Teaching

Minakshi Mishra (Principal)
M.Sc., M.Ed. Ph.D. (Education), Bharti T.T.P.G. College, Sri Ganganagar

Sant Lal Sarwa (Assistant Professor)
M.Ed. M.A. (Geography, Psychology), NET (Geography, Education),
Faculty of Education, Tantia University, Sri Ganganagar

ACADEMIC
UNIVERSITY PRESS

Principles of Teaching

Minakshi Mishra
Sant Lal Sarwa

ACADEMIC
UNIVERSITY PRESS

4378/4-B, Murarilal Street, Ansari Road, Daryaganj, New Delhi-110002.
Ph. No: +91-11-23281685, 41043100, Fax: +91-11-23270680
E-mail: academicuniversitypress@gmail.com

Year of Publication 2024-25

ISBN : 978-93-6284-933-5

Printed and bound by: Global Printing Services, Delhi
10 9 8 7 6 5 4 3 2 1

Contents

Preface

Principles of teaching are fundamental guidelines that educators follow to create effective learning experiences for students. One key principle is student-centered learning, where the focus is on the individual needs, interests, and abilities of each student. This principle emphasizes the importance of tailoring instruction to meet the diverse learning styles and preferences of students, promoting active engagement and ownership of learning.

Another critical principle is the establishment of clear learning objectives. Teachers should articulate specific, measurable goals for student learning, ensuring that lessons are purposeful and aligned with desired outcomes. Clear objectives provide direction for instruction and help students understand what is expected of them, facilitating a more focused and structured learning experience.

Effective communication is also paramount in teaching. Teachers must communicate clearly and adapt their communication style to suit the needs of diverse learners. By using a variety of instructional strategies and techniques, teachers can enhance comprehension and engagement, fostering a supportive learning environment where students feel valued and understood.

Furthermore, principles of teaching emphasize the importance of active learning. Encouraging students to participate in hands-on activities, discussions, and collaborative projects promotes critical thinking, problem-solving, and deeper understanding of content. Active learning experiences enable students to construct their knowledge actively, rather than passively receiving information.

Differentiated instruction is another key principle that recognizes the diversity of learners in the classroom. Teachers should employ various instructional approaches, materials, and assessments to accommodate the individual needs,

interests, and abilities of students. By offering multiple pathways to learning, teachers can support student success and foster a sense of inclusivity and belonging.

Principles of teaching highlight the significance of ongoing reflection and professional growth. Teachers should regularly reflect on their teaching practices, seek feedback from students and colleagues, and engage in continuous professional development. By staying abreast of best practices and research in education, teachers can continually refine their instructional approaches and enhance student learning outcomes.

Principles for constructing curriculum involve guiding principles and methodologies for designing educational programmes that are effective, relevant, and aligned with learning objectives. These principles emphasize the importance of establishing clear learning goals, incorporating diverse perspectives and content, promoting active engagement, and fostering continuous improvement. Additionally, principles for constructing curriculum emphasize the need for alignment with standards and assessments, differentiation to meet the needs of diverse learners, and integration of technology and real-world applications. Ultimately, these principles aim to ensure that curriculum development processes are comprehensive, systematic, and focused on enhancing student learning outcomes.

The book "Principles of Teaching" provides a comprehensive framework for educators to create effective learning environments guided by fundamental principles and best practices.

–Author

1

Teaching Principles

Teaching is a complex, multifaceted activity, often requiring us as instructors to juggle multiple tasks and goals simultaneously and flexibly. The following small but powerful set of principles can make teaching both more effective and more efficient, by helping us create the conditions that support student learning and minimize the need for revising materials, content, and policies. While implementing these principles requires a commitment in time and effort, it often saves time and energy later on.

Effective teaching involves acquiring relevant knowledge about students and using that knowledge to inform our course design and classroom teaching. When we teach, we do not just teach the content, we teach students the content. A variety of student characteristics can affect learning. For example, students' cultural and generational backgrounds influence how they see the world; disciplinary backgrounds lead students to approach problems in different ways; and students' prior knowledge (both accurate and inaccurate aspects) shapes new learning. Although we cannot adequately measure all of these characteristics, gathering the most relevant information as early as possible in course planning and continuing to do so during the semester can (a) inform course design (*e.g.*, decisions about objectives, pacing, examples, format), (b) help explain student difficulties (*e.g.*, identification of common misconceptions), and (c) guide instructional adaptations (*e.g.*, recognition of the need for additional practice).

Effective teaching involves aligning the three major components of instruction: learning objectives, assessments, and instructional activities. Taking the time to do this upfront saves time in the end and leads to a better course. Teaching is more effective and student learning is enhanced when (a) we, as

instructors, articulate a clear set of learning objectives (*i.e.*, the knowledge and skills that we expect students to demonstrate by the end of a course); (b) the instructional activities (*e.g.*, case studies, labs, discussions, readings) support these learning objectives by providing goal-oriented practice; and (c) the assessments (*e.g.*, tests, papers, problem sets, performances) provide opportunities for students to demonstrate and practice the knowledge and skills articulated in the objectives, and for instructors to offer targeted feedback that can guide further learning.

Effective teaching involves articulating explicit expectations regarding learning objectives and policies. There is amazing variation in what is expected of students across American classrooms and even within a given discipline. For example, what constitutes evidence may differ greatly across courses; what is permissible collaboration in one course could be considered cheating in another. As a result, students' expectations may not match ours. Thus, being clear about our expectations and communicating them explicitly helps students learn more and perform better. Articulating our learning objectives (*i.e.*, the knowledge and skills that we expect students to demonstrate by the end of a course) gives students a clear target to aim for and enables them to monitor their progress along the way. Similarly, being explicit about course policies (*e.g.*, on class participation, laptop use, and late assignment) in the syllabus and in class allows us to resolve differences early and tends to reduce conflicts and tensions that may arise. Altogether, being explicit leads to a more productive learning environment for all students. More information on how clear learning objectives supports students' learning.

Effective teaching involves prioritizing the knowledge and skills we choose to focus on. Coverage is the enemy: Don't try to do too much in a single course. Too many topics work against student learning, so it is necessary for us to make decisions – sometimes difficult ones – about what we will and will not include in a course. This involves (a) recognizing the parameters of the course (*e.g.*, class size, students' backgrounds and experiences, course position in the curriculum sequence, number of course units), (b) setting our priorities for student learning, and (c) determining a set of objectives that can be reasonably accomplished.

Effective teaching involves recognizing and overcoming our expert blind spots. We are not our students! As experts, we tend to access and apply knowledge automatically and unconsciously (*e.g.*, make connections, draw on relevant bodies of knowledge, and choose appropriate strategies) and so we often skip or combine critical steps when we teach. Students, on the other hand, don't yet have sufficient background and experience to make these leaps and can become confused, draw incorrect conclusions, or fail to develop important skills. They need instructors to break tasks into component steps, explain connections explicitly, and model processes in detail. Though it is difficult for experts to do this, we need to identify and explicitly communicate to students the knowledge and skills we take for granted, so that students can see expert thinking in action and practice applying it themselves.

Effective teaching involves adopting appropriate teaching roles to support our learning goals. Even though students are ultimately responsible for their own learning, the roles we assume as instructors are critical in guiding students' thinking and behaviour. We can take on a variety of roles in our teaching (*e.g.*, synthesizer, moderator, challenger, commentator). These roles should be chosen in service of the learning objectives and in support of the instructional activities. For example, if the objective is for students to be able to analyze arguments from a case or written text, the most productive instructor role might be to frame, guide and moderate a discussion. If the objective is to help students learn to defend their positions or creative choices as they present their work, our role might be to challenge them to explain their decisions and consider alternative perspectives. Such roles may be constant or variable across the semester depending on the learning objectives.

Effective teaching involves progressively refining our courses based on reflection and feedback. Teaching requires adapting. We need to continually reflect on our teaching and be ready to make changes when appropriate (*e.g.*, something is not working, we want to try something new, the student population has changed, or there are emerging issues in our fields). Knowing what and how to change requires us to examine relevant information on our own teaching effectiveness.

Much of this information already exists (*e.g.*, student work, previous semesters' course evaluations, dynamics of class participation), or we may need to seek additional feedback with help from the university teaching center (*e.g.*, interpreting early course evaluations, conducting focus groups, designing pre- and posttests). Based on such data, we might modify the learning objectives, content, structure, or format of a course, or otherwise adjust our teaching. Small, purposeful changes driven by feedback and our priorities are most likely to be manageable and effective.

CHARACTERISTICS OF MODERN TEACHING APPROACHES

A modern teaching approach in mathematics has the following characteristics: A learner–centered teaching/learning approach engages students actively in the teaching and learning process. Your students are the focus of teaching and learning. You are simply a guide, a coach, a motivator, or a facilitator of learning. You should provide learning experiences for the students and guide them to investigate, experiment, explore, and discover knowledge.

To facilitate this, you should first identify students' prior or initial ideas/ conceptions and use appropriate learner-controlled activities to counter 'naïve' ideas/conceptions. For instance, in teaching 'surds' in SS3, identify the ideas and conceptions your students already have about rational and irrational numbers, finding square roots of perfect and non perfect squares, which leads to the definition of surd. Engage your students in activities of finding square roots of numbers using either the division algorithm or prime factorization, and help

them to clear any misconceptions. Secondly, select instructional processes/ activities based on their needs, interest, feeling, *etc.* Identify areas in the finding of square root of numbers that they are finding difficult and guide them. Thirdly, encourage your students' initiative. Encourage your students who have clear understanding of the pre-requisite concepts, and guide those who do not have clear understanding and are yet to learn.

The activity or task – based characteristic of the modern teaching approach indicates that the learner is actively involved in the teaching – learning process. In teaching any mathematical concept, ensure that every student participates fully in the activities and learning experiences provided, and in any discussion in the classroom. Hence, base your instruction on concrete activity, task or real life problem. For instance, in teaching Constructions in SS1, make every student participate in carrying out actual constructions using their mathematical instruments. Do not just demonstrate on the board. Engage the students actively. Discourage the practice whereby your students attend classes without relevant instructional resources such as mathematical set. The modern teaching approach is interactive. Arrange your students in small groups to promote interaction among them, between them and you, and between them and available resources. Use discussion also to engage students in effective interaction.

For instance, in teaching probability in SS2, group your students into small groups of five say, and engage them in activity of tossing a coin or coins, casting of a die or dice, or shuffling a pack of cards, and guide them in the definition of various probability concepts. In teaching logarithms, guide students to discuss the characteristics of logarithms, the relationship between the characteristics of logarithms and standard form of numbers.

You should refer always to the curriculum to use the suggestions made on teacher- and student – based activities as well as the teaching – learning materials. A modern teaching approach uses authentic materials. Use real – life materials from your students' immediate environment (home, school, market, etc,), for instance, skeletal globe constructed from bamboo, for teaching longitude and latitude.

A modern teaching approach is integrative. It involves horizontal integration of curriculum content which links the topic/instruction to other subjects/ discipline/curriculum. For instance, you can apply modular arithmetic to shift duty, name of market days, and mensuration calculation in real life situations. Another example may require your application of logarithm in capital market and other real life problems.

The approach also involves vertical integration of curriculum content. Here, you link the topic/instruction to topics in the curriculum at lower/higher class level. For instance, you link logarithm in SS1 to logarithm of numbers greater than and less than one in SS2. Guide students to carry out laboratory activities and link the practical to mathematical theory.

A modern teaching approach is inclusive. You should cater for all categories of learners (*e.g.*, disadvantaged or vulnerable groups, special needs' learners,

minorities). For instance, you need to spread out class questions to various categories of individual students in the class, and try to identify and solve the learning difficulties of any disadvantaged group. Do not concentrate attention on the brighter students.

Also, make mathematics instruction gender sensitive. Do not neglect the female students in the mathematics class because they may not be performing as well as the male students. Treat both male and female students equally. Distribute questions equally across gender. Cite examples of female role models such as Prof. Grace Alele-Williams, just as you cite male role models, such as Prof. Chike Obi during mathematics lessons. A modern teaching approach provides conceptual understanding of mathematical concepts.

You should help your students to develop meaningful understanding of mathematical concepts. For instance, in teaching riders or proofs of geometric theorems, engage students in activities using paper cutouts, protractors, models of parallelogram, polygon, triangles, etc, to enable them to develop meaningful understanding of the properties of the riders. Do not simply state the theorems and derive the proof without your students' participation. A modern teaching approach involves authentic assessment. You should undertake formative and summative assessments which go beyond assessment of learning to include assessment for learning. That is, you should use feedback from assessment to improve mathematics learning. You should identify students' strengths and weaknesses and offer remedial programmes where necessary.

STEPS IN LESSON PLANNING

In the preparation of a lesson plan based on a modern teaching approach in mathematics, you should take five steps as follows:

- *Step 1:* Identification of students' prior ideas about the topic or pre-requisite skills
- *Step 2:* Exploration
- *Step 3:* Discussion
- *Step 4:* Application
- *Step 5:* Evaluation.

Each of the five steps has the components of: Mode of instructional delivery which can be individual or group or whole class; Teacher's Role/Activities, where you identify the activities you have to perform in each step in the teaching/learning process to facilitate learning among students; and Students' Role/Activities, where you identify also the activities to be performed by the students to enhance learning of concepts.

IDENTIFICATION OF STUDENTS' PRIOR IDEAS ABOUT THE TOPIC

In the identification of students' prior ideas/conceptions about the topic to be taught, make sure you specify the mode of lesson delivery, whether individual or group or whole class. You should identify the pre-requisite knowledge, skills, and concepts which your students already possessed about the topic to be learned. For instance, in

teaching quadratic equations, you should find out the ideas and conceptions your students already had about linear equations, factorization of quadratic expressions. For the teacher's activities, you should present some linear equations for students to solve, and some quadratic expressions for students to factorize. Students' role/activities will be to solve the problems you have presented to them.

EXPLORATION

You should engage students in activities to observe, manipulate experiment, investigate, and explore mathematical situations that will enable them to construct knowledge. The mode of carrying out the activities can be individual or group activities. For instance, in teaching longitude and latitude, your role/ activities as the teacher should be to provide real and skeletal globe in the class and guide students to manipulate and explore the globe in order to be able to identify the north and south poles, lines of longitude and lines of latitude, small circles and great circles, meridian and equator, parallel of latitude, radius of parallel of latitude, and radius of the earth. Your students are to engage in the activity of manipulating and exploring the skeletal globe, either individually or in small groups. Using another example, such as the teaching of quadratic expressions, you should present some quadratic expressions and guide students to sort them into examples and non-examples of quadratic expressions. Students will engage in the activity of sorting the given quadratic expressions into examples and non-examples of quadratic expressions.

DISCUSSION

You should engage the students in discussion of their experiences and findings based on the activities they had engaged in. The mode should be whole class discussion. For instance, in the teaching of longitudes and latitudes, you could guide the discussion by asking the following questions: (a). Where are the north and south poles? (b). What are the lines of longitude and lines of latitude? (c). Distinguish between lines of longitude and lines of latitude. (d). Which circles are small circles and which are great circles?

In the case of teaching quadratic expressions, you should guide students to discuss what makes an expression quadratic, how quadratic expressions can be factorized and methods of factorizing quadratic expressions. The role of the students should be to participate actively in the discussion, offering ideas, asking questions and seeking for clarification.

APPLICATION

Involve the students in practical application of solution of problems based on their discussion. For instance, you should involve students in practical application of solution of problems on longitude and latitude. The mode of instructional delivery can be individual. You should guide students to solve problems on calculating distances between two points on the earth's surface by sketching the positions of the places on the earth's surface.

EVALUATION

This is the step you where carry out evaluation of your teaching/learning process. This involves assessment of learning and assessment for learning. You should use individual orgroup. You should ask students questions based on what they have been exposed to. For instance, Sketch the position of the following places on the earth's surface (i) (150N, 300W) (ii) (15oS, 30oE). Use the results and feedback from the evaluation to reinforce learning. Unit 6 gives you more guide in doing this more effectively and efficiently.

BASIC PRINCIPLES OF TEACHING

In his classic handbook, Teaching Tips, Wilbert McKeachie notes that the unpredictability of teaching both frustrates and fascinates college instructors. You cannot anticipate every eventuality or problem that may pop up during a semester. Understanding and applying a few basic principles of teaching, however, not only will enhance student learning but also make your life as a teacher more rewarding and fun.

RHYTHMS OF THE SEMESTER

Much like the rise and fall of the plot in a novel, semester courses unfold in an arc of development. After the flush of excitement during the first week of class, students and instructors begin to settle into more of a routine. When you think of your own undergraduate courses, you'll recall a definite rhythm to the semester—a brief "honeymoon" period at the beginning when everything seems fresh and exciting; a longer span when students and instructors get to know each other and start establishing patterns of interaction; a stretch about three-quarters of the way into the semester when everyone seems concerned about deadlines, stressed, and, perhaps, ready for a break; and a few weeks before the semester ends, the final push, accompanied, we hope, by a sense of accomplishment.

If you recognize these rhythms, you can design lecture materials, readings, and assignments to fit well with student learning needs at particular points along the continuum. Scheduling all the "fun" learning activities during the first few weeks of the course probably isn't a good idea. On the other hand, waiting until the end of the semester to incorporate "fun" learning might send the message that you've "given up" on helping students work through the final, challenging push of the semester.

KEEPING STUDENTS ENGAGED

One of the tenets of American education is that students learn and retain information and skills better if they are actively involved in the learning process. Explain to your students that you expect them to prepare for class, think carefully about course content, take intellectual risks, and participate in class discussion. It is their responsibility to wrestle with the issues and concepts explored in the course; it is your responsibility to support their active involvement with the subject matter. You do this not so much by providing answers as by posing excellent questions.

A substantial literature exists on how students learn and how best to engage them in the learning process. Here are a few tips; many more are available in the Center for Teaching library and online resources.

Lecturing

- If you lecture, remember that research has shown most people actively listen for about 20 minutes. Plan your session accordingly with a break for small-group work, Q&A, or other active learning before resuming the lecture.
- Try to leave the lectern now and then. Walking "into the crowd" will help you make eye contact with students and keep them alert and curious about what you might do next.
- Vary the tone and rhythm of your voice. Use body language effectively.
- Define new vocabulary several times. Avoid jargon.
- Refer to and expand upon material presented in the textbook—don't repeat it.
- Use technology—PowerPoint, film clips, student response systems ("clickers"), tablet PCs, *etc.*—effectively.
- Speak clearly and at a moderate pace.
- Summarize major points.

Active Learning

- Usually involves students in more than listening;
- Entails less emphasis on transmitting information and more on developing students' learning and discipline-based skills;
- Engages students in higher-order thinking skills such as analysis, synthesis, and evaluation;
- Encourages students to explore their own attitudes and values; and
- Does not mean you must abandon the lecture format, which is one of several effective ways to convey information.

Active Learning Techniques

- Small-group activities encourage many more students to speak in class. It's harder to be a passive learner in a group of three than in a group of thirty. Small-group activities can be done even in classes of 500 students. All it takes is about five minutes and a well thought-out question or task for groups to work on.
- Effective use of teaching technology can present visual representations via PowerPoint, overhead projectors, videotapes, and tablet PCs. The Center for Teaching and Campus Technology Services can help you incorporate technology in ways that enhance learning and recall of course content and skills.
- Minute papers are easy, fun, and adaptable to many purposes. The goal of this exercise— which can take no more than a minute—is to gather feedback. Minute papers can help you discover what did or did not work well, as well as provide ideas about how to teach in new ways. It can be used in any size class.

- If you are trying to gather general information about what interests or confuses the students or what they think of your teaching, the feedback should be anonymous. Occasionally, you may want to just use the minute paper as a quiz; in that case, of course, names are necessary. Students write for a brief time in response to a focused question from the instructor.

Here are a few examples:

- What is the most important point you've learned in today's class (or this week's readings, this unit, *etc.*)?
- Did anything confuse you during today's discussion? If so, write it as a question or two.
- What has been the most effective teaching technique used during this unit?

You can do this exercise at any point during the class session, although most instructors do it at the end of a unit or the period. After you've looked through the responses, let students know one or two things you learned and how that information will affect the course. Students are glad to have an opportunity to express themselves in a way that has an impact on their learning in the course.

- Surveys can be conducted several ways, including electronic student response systems ("clickers") and minute papers, anonymous or not. Another effective way to survey students about their opinions or responses to a question is to have them line up along a continuum, discuss their choices, and then ask them to realign themselves along the continuum. If anyone has changed his or her place, ask them to explain why.
- A combination of small-group activities and surveys works well when each group holds up a card to indicate its choice of several answer options. Groups then defend their choices and try to convince others to "join" them.
- Allowing students to jot down a few thoughts before discussing in class can improve the depth of discussion and help those who feel shy about speaking off-the-cuff.
- Board work, role-playing, panel discussions, case studies, posters, and projects also actively engage students by enlisting the fully panoply of learning styles (visual, auditory, reading/writing, and kinesthetic).

WRITING

Writing demands critical thinking, organizational skills, patience, and the ability to critique others and to listen to criticism. It's a truism—but also true—that the act of writing forces us to construct our understanding of a topic—in other words, to create as well as to convey meaning.

Writing is one of the essential skills that defines an educated individual, yet teaching writing seems to be the juggernaut of many an otherwise gifted teacher. The following ideas about teaching writing might smooth your way:

- Make writing a regular part of the classroom experience. One-minute papers work well. They can be anonymous or signed. You also can invite students to read aloud what they've written.
- *Think carefully about the purpose of the writing assignment:*
  - — To demonstrate learned knowledge (a quiz or test);
  - — To show research abilities—analysis, synthesis, evaluation (term paper);
  - — To wrestle with an idea (short essay);
  - — To help students speak aloud or focus class discussion (one-minute paper);
  - — To help students understand that writing improves thinking (expository writing);
  - — To hone communication skills (series of drafts); or
  - — To express feelings and opinions, and to reflect on what has been learned, how, and why (personal essay, reflection).
- Design the writing assignment with explicit questions and provide clear learning objectives.
- Invite students to reflect—in writing— on their writing process for any particular assignment and also across the semester.

Even veteran faculty members wonder how to assess written work. Instructors sometimes find assessing personal writing, such as essays or reflections, especially challenging. But simply because a written piece is personal or subjective does not mean it cannot be assessed.

A few suggestions to help make assessment of writing effective for your students and efficient for you:

- Help students avoid the temptation to plagiarize by assigning a series of short exercises that build to the final paper or essay.
- Provide written comments in the margins. Marginalia need not be extensive, however, and if you have many students or many short assignments, you can rely on the "check, check-minus, check-plus" technique.
- Writing many comments such as "Good," "Weak," or "Confusing" probably helps the student less than fewer comments that are more specific as to why you find a sentence or paragraph good, weak, or confusing.
- One technique works especially well to start a conversation about written work. Rather than giving students grades for their first draft, ask them to read your comments and then respond. This assignment assures that they actually read and think about your comments. You also can have them rewrite certain sentences, paragraphs, or sections.
- Resist rewriting your students' work—you don't have time and they will not learn if you do the work for them.
- Grammatical errors should not be ignored. On the other hand, you should not serve as a copy editor for your students. Undoubtedly, they have been told about run-on sentences, "their" vs. "there," and misspelled words many times before. What to do?

  - — Put check marks in the margins and tell students to find and correct the errors on the marked lines.
  - — Mark and correct one paragraph and tell them to find identical errors and fix them in the rest of the piece.
  - — Tell students they will be exchanging papers for peer review of grammar and usage.
- Devote some time throughout the semester to teaching a few of the most frequent—and egregious—examples of bad grammar and usage. These exercises can be amusing, and students almost always appreciate learning or brushing up on a few basic writing skills.
- Develop and use a rubric for grading writing. Be sure to hand it out to students at the same time as you give them the assignment so they know what is expected of them. Writing assessment rubrics generally cover nuts-andbolts such as grammar and usage, but also include content, organization, critical thinking skills, and stylistic considerations.

SERVICE LEARNING

Today, many students come to college having already performed impressive volunteer work in their communities. They are eager to participate in volunteer and service-learning opportunities in college. Service-learning courses provide active learning experiences by integrating community service with academic course work. Service learning requires students to apply what they learn in class in their community service efforts and then bring their volunteer experiences to bear on their classroom learning. As a teaching assistant in a service-learning course, you may be helping the faculty instructor and students establish community partnerships. You also may be monitoring and helping to assess the service aspect of the course, and possibly even engaging in community service yourself.

Teaching in Laboratory or Studio Settings

- Students who take lab or studio courses necessarily engage in active learning. In these types of courses, teaching assistants work with students on a more individual basis. To enhance the lab or studio experience:
- Introduce the conceptual background for their activities in each session of the lab or studio.
- Inform them of what they are going to do and the learning objectives for the activities.
- Make certain you have already conducted the experiment, or, in a studio, are familiar with the materials and media being used. Point out where you had difficulties and how you resolved them.
- Circulate around the room as students work. Ask them what they're doing and why and to interpret their results.
- Ask them to link what they are doing at the moment to what has been learned in the classroom or through the textbook.

- Invite questions.
- Remind students about safety issues and where to find devices and individuals to help in an emergency.

EFFECTIVE TEACHING IN LARGE CLASSES

Large classes are a reality in Iraq and they pose particular challenges. People have varying opinions on how large the number of students should be in a so-called 'large class'.

"There can be no quantitative definition of what constitutes a "large" class, as perceptions of this will vary from context to context". Some people hold that 50 would be large enough for a college class; others would argue that a large class could have as many as over 100 or even 150 students.

However, most teachers generally agree that a class with 50-60 or more is 'large' enough. In this paper, a 'large class' refers to a college class with the number of students ranging from 60 to 150.

Large classes present special challenges to the teacher. The two major educational challenges are that they make students feel anonymous and passive.

Then, depending on how the teacher responds to these challenges, there may be second-level problems of class morale and discipline. In addition, the teacher faces inherent logistical problems, *e.g.*, distributing and collecting homework, tests, handouts, posting grades, *etc.* To come over these problems, this research has been organized around a set of questions related to the two major educational challenges mentioned previously. They include:

Fortunately, there are ways to make large classes almost as effective as their smaller counterparts. Without turning himself inside out, the teacher can get students actively involved, help them develop a sense of community, and give frequent homework assignments without killing himself with impossible grading loads.

1. *Discomfort*: Many teachers worry about the physical constraints imposed by large numbers in confined classrooms. They feel unable to promote student interaction, since there is no room to move about. Some teachers also feel that teaching in large classes is physically very wearing.
2. *Control*: Some teachers feel worried by the discipline aspects of large classes. They feel they are unable to control what is happening, and that the classes become too noisy.
3. *Individual attention*: Many good teachers are concerned that they are neglecting the needs of their students as individuals.
4. *Evaluation*: Teachers feel a responsibility for checking all of their students' work.
5. *Learning effectiveness*: All teachers want their students to learn. They are understandably worried if they do not know who is learning what.

However, problems, such as these, are not impossible to be solved, or at least partially. In fact, what the teachers perceive as problems associated with large classes sometimes may not be so problematic to the students.

The teacher has to make a decision about what course structure to use. There are four basic choices and each has its special challenge to making that option works effectively.

1. *Complete Lecture*: Keep the class as one large class, and keep the lecture as the main teaching/learning activity. The three big challenges here are (*a*) making the lecture very interesting, (*b*) finding ways to incorporate active learning, and (*c*) managing the logistics of papers, exams, grades, *etc.*
2. *Part Lecture/Part Breakout Sections*: In this option, the students meet part of the time as one large class and part of the time in smaller discussion or lab sections. This is the main idea of the communicative approach.
3. *All Multiple Sections*: In this option, there is no large lecture class, only multiple smaller sections, taught either by full-time faculty and/or teaching assistants. This has the benefit of smaller classes, which eliminates most of the problems of student anonymity and passivity. This can be noticed in the scientific specialties at laps.
4. *One Large Class, Structured Around Small Group Learning*: In this option, the class remains together as one large class, as in 'option 1'. Nevertheless, the dominant teaching/learning activity is carefully structured small group work, not lectures. This approach has several benefits: (*a*) it eliminates the problems of student anonymity and passivity, (*b*) minimizes the logistics challenge, and (*c*) keeps staffing costs at a minimum. It does require a teacher who knows how to use small groups and can solve the problems involved in using this in large-class settings.

Technically, teachers have to be capable of using microphones and data show properly to make their students hear and see clearly. Inadequate use of such classroom equipment may lead to the lack of interest and involvement of the students in the classroom learning.

The most prominent ways of developing good discipline in a large class are:

1. Establish a code of behaviour that is created by teacher and learners together. It should state clear basic rules of conduct that learners understand, such as; they have to work quietly; they may talk, but not loudly; and students who have finished the lesson tasks can read a book to keep them busy.
2. Use the environment and experiences outside the classroom (*i.e.*, not only as much speech as possible but also as diverse a range of situations as possible). It offers a new, different space when students get noisy or bored, and helps to reduce overcrowding.
3. Make the best use of the students' power saved from large class teaching. Teaching in large classes can minimize many human resources. In fact, careful and thorough planning of a lesson is the first step to the effective teaching in large classes.

4. Bring the teacher authority into full play and teach not only knowledge but also learning methods. Since students tend to listen to the teachers, and wait until they are being asked, even in small classes, the teachers of large classes can make their teaching more of a lecture based or transmission style. This does not mean that the teaching of learning method is more important than the teaching knowledge. Most teachers agree that telling the students how to fish is more important than merely giving them some fish, no matter how many fish they can give their students.
5. Collaborate with the students and build up a good learning atmosphere in large classes. Many students value the 'safe' learning atmosphere in large classes. Therefore, teachers of large classes should take advantage of this, and build up a collaborative and lively learning atmosphere. Xu (2007: 4) says in a research published in 2001 that many teachers held that a good class has an atmosphere of a feeling of warmth, mutual support, an absence of fear, a feeling of comfort, mutual respect, people mindful of other people's abilities and limitations, a feeling of cooperation,, and a feeling of trust, *etc.*
6. Take advantage of the size of the large classes. The teaching practice and experience of many who have ever been teaching in large classes show that it is not only possible to build up a good learning atmosphere in large classes, but also feasible to take advantage of the large class size. Large classes can be of great advantage throughout the following points (ibid: 5-6):
    a. The more students, the more ideas, and the more lively a class can be.
    b. The more students, the more interrelated and the more unified the class can be.
    c. The more students, the more competitive, and the more positively motivated the class can be. In the limited times of the students' being asked questions, only those few excellent students may always volunteer to answer them. However, these students set good examples to the other students.
7. Communicate, discuss and share regularly the classroom management techniques with other teachers who are involved in large class teaching. Xu (2007: 5) holds that, "The teachers' skill in classroom management is the primary ingredient for success with group work in large classes."

How can the teacher encourage attendance in the large classes?

1. Make the class informative, interesting, and relevant to students' lives. Add variety/entertainment to lectures (animations, slide shows, video clips, recorders, guest speakers, *etc.*).
2. Use lots of supplemental illustrations/examples that students cannot get any other place other than in class.
3. Give lots of exam-directed problems in class.

4. Count class participation and quizzes towards the final grade.
5. Give students a topic to think about or a puzzle to solve for fun or for credit for the next class discussion.
6. Give more scheduled exams covering less material.
7. Give weekly in-class assignments that are related to the subject. This gives students the chance to apply what they have learned. Collect homework assignments, and give students credit for handing it in.
8. Convince students that exam success depends on attendance. Establish a policy that· grades will be lowered according to the number of lectures missed.

How can the teacher easily take attendance in the large classes?

1. Have students sign in at the door.
2. Some instructors take attendance at the end of the session rather than at the beginning, so as to discourage students from signing in or being signed in and then leaving.
3. Taking attendance at irregular intervals may suffice, especially if there is a clear policy for lowering grades when absences are excessive.
4. Give a practice exam problem at end of lecture on scan sheets. This is both a way to· take attendance and to test students' ability to apply key concepts.
5. Collect homework one week and return another; students must be present both times to get credit.
6. Pass a sheet of paper to the students asking them to write down their names then compare it with their daily homework papers to make sure of their precenss.

How can the teacher develop the class exercises? Lectures as a rule have little educational value.

People learn by· doing, not by watching and listening, as the new trends elaborate. If the teacher is teaching a small class and he is good, he may be able to prod many of his students into activity; get them asking and answering questions, discussing issues, challenging conclusions, laughing at his jokes, whatever.

However, with large classes, no matter how good he is, he probably will not be able to persuade most students to open their mouths in front of 60 and more classmates; it feels too risky for them (ibid.). If the teacher hopes to move away from statue students to active students, the teacher has to choose deferent approach.

A technique he can count on is the in-class exercise. As the teacher lectures on a body of material or go through a problem solution, instead of just posing questions to· the class as a whole and enduring the ensuing time-wasting silences, occasionally assign· a task and give the students anywhere from 30 seconds to 5 minutes to come up with a response. Anything can serve as a basis for these exercises, including the same questions he normally asks in lectures and perhaps some others that might not be part of his current repertoire (*i.e.*, teaching).

Whichever approach the teacher uses for the exercises (individual, pairs, groups, or think-pair-share), at least some of the time he must call on groups or individuals to· present what they came up with.

If he never does this, students will have little incentive to work on the exercises when he assigns them and many will not, but if they think, they may be called on, they will not want to be embarrassed and so he will get most of them actively involved in what he is teaching. Group exercises have the added benefit of giving students an opportunity to meet and work with one another, a good first step towards building a sense of community.

He can augment this benefit by periodically asking the students to sit in different locations and work with students t hey· have not been with before. The principal benefit of these exercises is that they get students acting and reflecting, the only two ways by which human beings learn.

The teacher can also use in-class exercises to wrap up a lecture period. He can ask the students to write down and hand in a brief statement of the main point of the lecture, or come up with two good questions or test problems related to what he just presented, or tell him how they think he can improve the class.

He can scan their responses and· quickly see if they got the main idea he is trying to present, identify their main points of confusion, or discover things he can do that will make the class better for them.

The teacher doesn't have to spend a great deal of time on active learning exercises in class; one or two lasting no more than 5-10 minutes in a 50-minute lecture can provide enough stimulation to keep the class with him for the entire period.

How can the teacher reduce the feeling of anonymity?

1. The teacher must know the names of at least some of his students using different· ways
2. He must create a more personal environment by letting students 'know' him in appropriate ways (his interests, how he first encountered a concept, and how he· uses course-related materials in problem-solving, *etc.*).
3. He can try to find ways to be accessible to students on a personal level using different strategies; arrive early and chat with students who are already there, greet students as they come in, stay a few minutes after class to answer individual questions, consider lecturing or leading discussion from different points of the classroom to give students the feeling of being in the midst of the action rat her· than simply being an observer, *etc.*
4. When he asks questions, he can start on a personal level, asking students to share their own experiences with a concept, then move to the more abstract.

How can the teacher better manage the class climate?

1. The teacher can start on the first day of class by arriving at the classroom early;· greeting students with a smile and making some comments when it feels comfortable and natural; sarting class on time and introducing

himself and telling them something interesting about himself like, what got him interested in this subject in the first place. Leting students know what his personal teaching style is and how he likes to be treated, their responsibilities and his responsibilities, the grading system· for the course, and how assignments and projects will be assessed; and createing a first day experience that sets the tone for the rest of the term and leaves his students looking forward to the next class.

2. He can create an intimate climate by talking, not lectureing; reminding them frequently of his office hours, emphasizing that he is available to chat with students at those times; and when he covers an important concept, he must not say 'Any· questions?' instead, he can say 'O.K., someone ask me a question about this concept from the last two rows.' This tells his class that he wants questions, and he will get them one way or another.
3. He must create a comfortable climate without letting the students run over him. He can lay out his expectations for student behaviour in writing leting them know that if they are disruptive, that they can be dismissed from the class.
4. He has to give feedback to students, especially when he corrects a wrong answer or· statement, as Ives (2007: 7) indicates:
   a. Useing a question as a respond. For example; 'Are you sure that …?' or 'What leads you to that conclusion?'
   b. Validating their thought process: 'Oh, I see. Comparing this sample with that sample, you might think there's a relationship here.'
   c. Stating what piece of information they did not take into account, or what· implication they did not consider.
5. He must be honest with students regarding his inexperience as a teacher.
6. He have to remember that even quiet people can be excellent teachers. He doesn't have to be hilarious or extroverted to be a good teacher, he just need to be committed to their learning, enthusiastic, and knowledgeable.
7. He must take into account some of the differences between preparotory school and· college students in planning and implementing his course. Students do not come to college with the requisite skills to be successful at this level. Their critical thinking skill can be weak. Students may not have developed good note taking skills. The teacher provides them with direction about what is important with his handouts, homework assignments, in class activities, and review sessions.

EFFECTIVE STRATEGIES FOR TEACHING ENGLISH LANGUAGE LEARNERS

Students with English as a second language (ESL) constitute a significant percentage of the population of our nation's schools. This population continues to increase more rapidly than that of native English speaking students (Shore,

2001). The language minority population has a high drop out rate. These students are also among the lowest ranking in academic achievement and expectations. They represent an at-risk population faced with a wide range of challenges (Thompson, 2000).

This presents a unique challenge for teachers as we strive to help these students achieve in learning the English language and the academic material specified in our content area learning standards. Every teacher who teaches subject matter in English to ESL students is not only a teacher of the content area but is a teacher of English as well. As educators, we must continually reflect on our teaching and update our practice to address the needs of this population, placing a strong emphasis on the human side of teaching. We must continually focus on these students and find effective ways to arrange their learning to help them achieve.

This tutorial is a summary and critical analysis of four recent journal articles on the above subject. The articles focus on the challenges ESL students face and how they translate into challenges for teachers. Following the summary of articles, strategies that teachers can use to help overcome these challenges will be discussed.

LEARNING ENGLISH AND LEARNING AMERICA

This chapter considers the challenges faced by language minority children at school as they experience what is referred to as "language shock," a struggle to learn the English language and be accepted in a society that is not always accepting and not always willing to embrace diversity. These students are in a strange land trying to maintain a sense of identity related to their native culture and also become American. What a heavy burden for a young person!

Social and political issues surrounding immigration and diversity in our nation complicate the seemingly basic task of learning English. The role of schools in the Americanization of immigrant students is formally identified as making them fluent English speakers.

Hence, our schools label and serve these students based on their ability or inability to speak English. However, ESL students encounter many obstacles in their efforts to become proficient in the English language. They often come to realize that in order to be fully accepted, they must abandon their native language, surrendering an aspect of their identity. They are caused to feel they must either speak English or nothing at all. Thus, they become caught in a painful power struggle over the use of English and their native language.

As educators we need to realize that education occurs in the context of a social climate. The relationships between students and accompanying range of social behaviours have a major impact on how well ESL students learn English and how well all students learn overall. Children cannot achieve in an unwelcoming, hostile environment. Many children are made fun of when they try to speak English and also when they speak their native language; so they end up silent and withdraw from participation. This further interferes with their learning and achievement.

The English that ESL students are taught is academic English. They often lack the ability to interact in social settings with English speaking peers because they are in separate classrooms and often have limited opportunity to interact academically or socially. They often have great difficulty learning the "slang" and social English because they have no one to learn it from. These children come to prefer English out of necessity, often abandoning their native languages to fit in. They end up without comfort in either language and may end up losing the ability to communicate with family members and friends in their native land.

The author of this chapter concludes that our ESL students will remain torn between two worlds until society truly embraces diversity and the notion that biculturalism and bilingualism are assets. What is needed in the education of ESL children is the development of English and maintenance of their native language.

BARRIERS TO MEANINGFUL INSTRUCTION FOR ENGLISH LEARNERS

This chapter focuses on effective ways teachers can help ESL students overcome barriers to meaningful instruction. Teachers can use strategies based on social interactionist theory, such as that of Vygotsky, to create classroom conditions that foster learning by modelling, scaffolding and helping students to construct understanding, with the eventual goal of becoming independent thinkers and problem solvers. The author identifies four loads as barriers to meaningful instruction: cognitive load, culture load, language load and learning load; and she states teachers must be skilled at lowering these barriers and sparking student interest and curiosity by developing a creative, wise and passionate curriculum.

Cognitive load refers to the number of new concepts embedded in a lesson. It is critical that we consistently assess prior knowledge of all students, ESL students particularly, and look to identify the concepts and skills the students do and do not possess. We must then fill in any conceptual gaps by trying to relate new concepts to life experiences of ESL students. Thus, it becomes more critical to get to know and understand these students.

'Culture load' refers to the way language and culture are related and the amount of cultural knowledge required to comprehend meaning or participate in an activity. Meanings of words are determined by the uses of words within linguistic and cultural settings, never the same in any two cultures. English learners need to learn the words in English as well as the cultural background that gives the words their English meaning. They need to learn words in context to understand the meaning.

Additionally, the information conveyed in our textbooks and lessons is culturally embedded. Some texts or topics can actually be culturally offensive. Culture load also refers to how teachers expect interaction to occur in a classroom. This would include when to speak, when to stay silent, when to

raise hands and when to write. These expectations vary from one culture to the next. English learners are often expected to determine the classroom behavioural norms independently. The author offers several strategies to help teachers lighten the culture load for students. Teachers should treat English learners with respect, not judgment, and try to build personal relationships with students, their families and communities.

Teachers can use information gained through these relationships to develop lessons and activities that help students understand the American culture while still respecting the culture of the student. By demonstrating respect for students, teachers allow a door of trust to open that can serve to further deepen a nurturing teacher-student relationship.

The next barrier, the 'language load,' refers to the number of unfamiliar words encountered as an English learner reads a text or listens to teacher or peer academic talk. Teachers can lighten this load by rewriting or explaining text material. Complex sentences can be broken down into comprehensible parts. Academic vocabulary can be presented at the start of a lesson and highlighted. Several different texts can be available covering the same content but at different reading ability levels. Additionally, teachers should model both academic and social language and scaffold its appropriate use to help the learner acquire it, use it effectively and move to more sophisticated levels of speaking and writing.

The 'learning load' represents what teachers expect students to do with English in the learning activities. An example offered by the author is brainstorming, an activity that is oral and fast-paced, with few visual examples and minimal clarification in the initial stages.

An English learner would have difficulty following such an activity, let alone participating. Thus, teachers must carefully consider the learning load of all activities involving English learners, making adaptations and offering supports accordingly. One such strategy is the language bath.

This strategy involves the teacher doing the initial talking about a new topic and students listening before any brainstorming or other activity is assigned. This strategy is also effective with English speaking students. It prepares students to participate by helping to familiarize them with vocabulary and develop their thoughts on a topic.

The last concept discussed is what the author calls the "yearning goad," which is intrinsic motivation, a drive to know and learn more. This needs to be cultivated by teaching, whenever possible, through topics of high student interest. Teachers should also endeavor to broaden student interests by sharing their passions with students. Critical selection and creative implementation of curriculum are also important. By lightening even one or two of these loads and arranging meaningful learning for students, teachers can motivate students and facilitate learning of both the English language and content. This can help ESL students avoid being misinterpreted as unmotivated or resistant to learning.

2

Principles of Selecting Technology for Instruction

ONSITE USES

Onsite uses of technology involve learning that takes place in the classroom or computer lab in a teacher-led, whole-group setting. Technology-based activities usually serve as a supplement to the core curriculum and are carried out within normal course meeting times. Early examples of onsite technology uses include computer-assisted instruction (CAI), which involved the use of computers to teach English vocabulary and structures (*e.g.*, verb conjugations). This focus was augmented by computer-assisted language learning (CALL), which emphasized second language acquisition processes and provided opportunities for learners to work together on specific topics and projects (Egbert, Hanson-Smith, & Chao, 2007). Today, CALL typically involves use of the computer, Internet, or software programmes to provide authentic and interactive opportunities for language learning.

Perhaps the most widespread application of technology in onsite settings to date is the use of software programmes designed for language learning. Three examples of software used in adult ESL settings are *The New Oxford Picture Dictionary CD-ROM, Rosetta Stone,* and the *English Language Learning and Instruction System.*

The New Oxford Picture Dictionary CD-ROM covers more than 2,400 words and is organized into 13 themes such as people, housing, and food, with each theme divided into several topics. The CD-ROM includes sound, animation, interactive exercises, games, and assessments.

Rosetta Stone software has been adapted for use with English learners at K–12, adult education, and postsecondary levels. The *Rosetta Stone* company asserts that use of its software accelerates the progress of learning English by using interactive English lessons. Learners acquire English and also develop learning strategies that help them understand unfamiliar words in context that they may encounter beyond the lessons in the software (Marcy, 2007).

The English Language Learning and Instruction System (ELLIS) emerged in 2001 as a learning package to support adults learning English in England. In today's American market, it includes two products: *ELLIS Essentials* and *ELLIS Academic.* The latter targets secondary school and adult learners. It includes five modules with native language support in five languages (Cantonese, Haitian Creole, Hmong, Spanish, and Vietnamese) plus digital self-paced lessons that incorporate audio and multimedia learning, voice recording, and dialogic role play.

Lessons are designed so that learners hear interactions in a variety of everyday settings and explanations of vocabulary and grammatical structures, which allows them to experience the application of the materials in real-world settings. Learners can play recordings at different speeds and record and play back their own language (Ibarz & Webb, 2007, p. 8). Versions of the software available in the United States contain course management and assessment tools for instructor use.

BLENDED USES

In blended uses, technology serves as a supplement to the primary course curriculum and is used both within classes or labs and outside the classroom (*e.g.*, in the home, library, or community centre) without the teacher. Technologies that lend themselves to blended uses include software such as the programmes described above; computer-mediated communication (CMC), in which learners in a programme interact online among themselves or with learners in other programmes and settings (Chapelle, 2008); and Web-based learning. Three examples of Web-based learning—project-based Web learning, Webquests, and Web-based games. Because they require a certain level of literacy to be used effectively, teachers should consider the ability of their students to participate before deciding whether to make use of Web-based learning.

In *project-based Web learning*, learners work together to complete tasks that are primarily Internet-based and may involve the use of e-mail and word processing (Gaer, 2007). While working on projects, students engage in meaningful language through reading and writing. Final products can be posted on the Web as examples for future students and for use in future projects and collaboration (Gaer, 2007, p. 81). Susan Gaer has compiled an Email Projects Home Page that showcases a variety of projects: an intergenerational culture project, an annotated booklist, international home remedies, cookbooks, and virtual school. Other relevant sites can be found by typing "project-based Web learning" into a search engine. Online projects are useful for adults learning

English, because lessons can be designed to promote the sharing of cultural heritage and tradition and civic and community integration. Though examples can be found online, teachers can also design projects themselves using free online Web pages and resources.

Webquests are a specific type of project-based Web learning that focus on inquiry and group work and involve gathering information and resources from the Internet (Gaer, 2007). Webquests are intended to promote learner engagement through reliance on teamwork and through the authenticity of topics and activities. Project guidelines may facilitate learning by listing specific Web sites that learners should visit in order to complete the quest and by encouraging groups to work together orally and in writing.

Appropriate quests for adult learners are based on themes that involve the learning of life skills such as literacy, parenting, or consumer rights. The Adult Literacy and Technology Network provides free Webquest materials. Webquests are useful in settings with adult learners from diverse backgrounds who would benefit from opportunities to engage in language and literacy interactions. Students with strong oral language skills in need of reading and writing development would also benefit from engaging in Webquests.

Web-based games can be accessed from the classroom and other locations (Smith-Stoner & Willer, 2005). They are appropriate for beginning-level adult English language learners and can also be productive for parents to use with children who are learning English. Examples include crossword puzzles games based on grammar, vocabulary, and spelling matching games; and hangman.

ONLINE LEARNING

Online learning is entirely Internet-based. While there may or may not be teacher involvement, teachers and students rarely meet onsite. Communication and the transmission of course content take place online. Reynard (2003) has named this type of learning computer-mediated distance education (CMDE). CMDE gives adult English learners the opportunity to learn anywhere, anytime. Three examples of online learning programmes are *English for All, USA Learns,* and *Learner Web.*

English for All offers free membership and self-directed lessons for adults. Five stand-alone videotapes (available for purchase) facilitate lessons designed to help learners develop vocabulary, grammar, reading comprehension, and life skills. Sections, called episodes, include free, printable materials that align with the content. *English for All* can be used with adult English learners from high-beginning through high-intermediate levels of English proficiency.

Because the videos are interspersed with vocabulary and grammar lessons, which can be less interactive than other activities but are nonetheless valuable to the language learning process, they are well-suited for motivated learners who are self-starters. The platform is part of the Cyberstep project funded by the U.S., Department of Education and developed by the Division of Adult Career Education of the Los Angeles Unified School District.

USA Learns is a free Web portal designed for adults learning English. It offers online membership and curricula for three different English proficiency levels: beginning English skills, low-intermediate English skills, and intermediate reading skills. There are clear distinctions among the three levels in terms of the listening, reading, and writing activities included. Lessons are introduced with brief videos followed by a list of new words. Depending on the level, words are introduced with pictures, audio, video, or written definitions. After new words are introduced, learners complete quizzes by matching the new words with the correct image or definition. Embedded in the English lessons are relevant life skills, such as finding a job, renting a place to live, and managing money.

Learner Web is a free Internet application that provides support for adults with a variety of educational goals including learning English. It connects learners with resources and is maintained regionally by community-based organizations. Unlike the above-referenced Web-based learning opportunities, *Learner Web* is capable of providing learners with both online and in-person support through its community-based partnerships. Users complete individual profiles that include their native language and personal goals for participation in the programme. When learners log on to the Web site, they spend most of their time in areas selected specifically for them based on their profile.

Each goal includes a range of steps that learners must complete. Each step includes Web-based activities followed by quizzes to assess learning. In their own online workspace, learners compile portfolios that align with their individual profiles and goals. *Learner Web* is particularly useful for adult English learners who are in need of additional coursework, such as GED support or civics lessons, because in addition to English lessons, it includes a variety of other courses. Another key aspect of *Learner Web* is the community support available to students, which benefits adult learners in urban areas with access to libraries and community centres.

CONSIDERATIONS

Several issues need to be considered when using technology to support instruction in adult education programmes.

- With all three types of uses (onsite, blended, and online), deliberate attempts should be made to promote group work and interaction, both online and face to face. Otherwise, the use of technology may result in isolated language learning and limited opportunities for meaningful in-person interaction in English, a key element of language learning (Ellis, 2008). Especially in distance settings, a lack of in-person interaction can be a challenge to some learners, and little to no onsite interaction can affect the potential for community building and a sense of group inclusion (Khalsa, Maloney-Krichmar, & Peyton, 2007).
- Teachers need to be able to adapt curricula so that technology use supports learning goals, and technology is used as a tool and not as a substitute for instruction (Lam, 2000; Reynard, 2003).

- Because the use of technology is relatively new in adult education settings, there may be limited access to computers, video capabilities, audio, Internet, software licenses, and technology support (Warschauer, Knobel, & Stone, 2004). Computer labs, with the associated licenses and software, are expensive and require teacher knowledge to use and administrator and administrative support to be maintained.
- Adults learning English may have limited access to technology outside of the education setting (Webb, 2006). Teachers planning to include technology in onsite instruction need to understand the extent to which students have access to computers and the Internet.

A useful first resource for adult educators integrating technology in the classroom is the Outreach and Technical Assistance Network for Adult Educators, which addresses many of the issues described here.

CONCLUSION

Technology is increasingly used in adult English language learning either as a complement to teacher-mediated instruction or as the sole means of learning. Although access to technology may present challenges to adult education programmes and practitioners, these can be overcome. Online platforms have progressed considerably in recent years and promise to offer increasingly useful, affordable, and accessible applications and tools for language learning. Teachers using technology need to continue to provide opportunities for in-person interaction to promote language and literacy development. Further research is needed on the impact of different uses of technology and on uses that promote English acquisition over time. Given the rapid rate of innovations in software and Internet access, long-term research studies are needed to understand more about the role and impact of using technology with adults learning English.

STEPS FOR DEVELOPING SELF INSTRUCTIONAL MATERIALS

ASSOCIATIONISM

Aptly named, Associationism is a theory about how items combine in the mind to produce thought and learning. Not only are a great many of histories great minds associated with associationism, such as John Locke, George Berkeley, David Hume, and John Stuart Mill, to name a few, but the theory was also to give rise to behaviourism. The basic tenants of Associationism are quite easy to understand: items are associated in the mind through experience. These items are derived from experience, and combine to form thought. For example, a small child learns not to touch a fire because that child associates the fire with pain, the pain coming from past experience. Each item can combine with other items to form a more complex idea. A good analogy is that of a sentence. Each word in a sentence is represents an item; the words are combined to form ideas and thought, the sentence. An infinite number of sentences can be formed by rearranging the words.

There are four typical principles of associationism, and three main processes. The principles state that items that are contiguous in time or space are lined by association, that items that are similar are linked by association, that items that contrast are linked and that items that have a cause/effect relationship are also linked. These linkings all occur through the three processes of sequencing, compounding and decompositioning. Sequencing refers to a type of chronological pattern, where as compounding refer to the building up and breaking down of items, respectively.

Associationism can be traced all the way back to Aristotle, who believed it was "common sense" that different aspects of an object combined together to become the idea of the object. For example, the colour, taste, feel and smell of an apple combined together to become the idea of an apple (Boeree, 2000). After Aristotle, associationism fell out of common philosophy as it was considered a basic description of every day events. However, John Locke and David Hume began to revive associationism. Locke argued that there were not innate ideas, only ideas that were dependent on association of sensations. Hume reinforced the ideas of resemblance, contiguity and cause and effect. John Stuart Mill, the most famous proponent of associationism, later expanded these procedures. Associationism is seen as the beginning of cognitive psychology, and began to explain the existences of a conscious and of altruistic motives. Associationism paired experience to create thought and learning. Learning was seen as the formation of associations between unrelated information based on their contiguity. Importantly, the sum (thought) can be created without conscious memory of the individual parts.

Although associationism gave way to behaviourism, remnants of associationism can still be seen in psychology as well as learning. The famous ink-blot tests use associationism to help understand other underlying psychological issues. Most of us have used association techniques to remember an address or a friend's birthday, or the answers to a test question. The possible educational benefits of successfully incorporating associationism into instructional technology are great. In fact, it would be difficult to image learning some aspect of technology without it building on and being associated with a former.

BEHAVIOURISM

Most of us these days would like to believe that a theory of learning like behaviourism doesn't exist, that it is a long-gone theory only existing in the mind of a few out of touch psychologists. In fact, most of us cringe at the thought that humans could, and perhaps do, learn and behave like dogs, rats and pigeons, that we salivate at the thought of food, or that we are a product of a biology that we cannot purge. Most of use would, however be more comfortable with behaviourism if we understood it better.

Essentially, behaviourism is the idea of stimulus-response, that if X occurs, Y will follow. We live our lives every day with this principle and do hundreds of

things based on the stimulus-response model. If I touch fire, it will hurt, so I pull my hand away; hit my knee with a small hammer, and it will jerk. It is simple enough. Carried further, we can achieve a conditioned response, where we have learned to have a response. If the light turns red, then I stop my car. And, carried yet further, if there is a stimulus, I will have a response, and if I am reinforced for having that response, the frequency of that response will be reinforced.

Ivan Pavlov's work with his dog and classic conditioning, the idea that you could condition a reflex, signalled the beginning of behaviourism. He found that he could give food to a dog and it would salivate, ring a bell instead of giving food and the dog would salivate as well. The stimulus, food, generated a response, but the response could be conditioned as well. John Watson, a colourful character who had trouble with his love life and his professional career, continued in this vane and was really the first to put behaviourism into the American vocabulary. His experimental subjects were not dogs, but rats, whom he trained to do real-life learning tasks for food rewards (behaviourism.html). He believed that mental concepts had little or no impact on behaviour. Because of career missteps, Watson wrote mainly from a layperson's perspective, but managed to apply his theories of behaviourism to everyday issues such as advertising. He is, however, referred to as the father of behaviourism.

B.F. Skinner, on the other hand, took behaviourism one step further with his experiments on reinforcement. He believed that behaviourism was not all about reflexes; rather, reinforcement of a response was responsible for learning. This is called operant conditioning. Skinner believed that both positive and negative reinforcement existed, and that behaviour could be shaped until it approximated the target behaviour. He later applied this theory to learning. Behaviourist theories of learning are, "... relatively simple to understand because it relies only on observable behaviour and describes several universal laws of behaviour. Its positive and negative reinforcement techniques can be very effective—both in animals, and in treatments for human disorders such as autism and antisocial behaviour. Behaviourism often is used by teachers, who reward or punish student behaviours," (Funderstanding, 2002)

Obviously, there are many criticisms of behaviourism. The theory cannot account for all kinds of learning, nor can it explain some learning. Additionally, the human idea of free will and responsibility for actions is lost. "The central tenet of behaviourism is that thoughts, feelings, and intentions, mental processes all, do not determine what we do. Our behaviour is the product of our conditioning. We are biological machines and do not consciously act; rather we react to stimuli," (Cohen, 1987).

Instructional technology has had a long partnership with behaviourism. Skinner was one of the first to apply his theories of behaviourism to instruction with his teaching machine, a machine that rewarded the learner every time a correct answer was given. This teaching machine later grew into Programmed Instruction, and is still a part of many of today's computer assisted learning, particularly in the filed of language learning.

INFORMATION PROCESSING

Most of us understand the difference between short-term and long-term memory, but few us understand how the two work, independently or together, and even fewer of us understand how these two functions can impact learning. The Information Processing Approach can help answer these questions.

Information Processing theory, put forth by George A. Miller, compares the human brain to a computer. The brain is given input through sensory functions (sight, hearing, smell and touch). The brain takes this information and transforms it into a different form, and then performs operations, but reacting to or storing the information. The idea of learning comes from understand how the information is stored.

Short-term memory is sometimes referred to as working memory. It is that which is easily recallable, and easily forgotten. The average time a bit of information is held in short-term memory is 15 to 20 seconds. After that, the information is either transferred to long-term memory or forgotten.

Long-term memory can be compared to computer disks, where the data is held until needed. Some information is held and never recalled, while other information may be needed but recalled with difficulty. According to Huitt, long-term memory stores the information in three basic structures. These structures are Semantic Memory, which holds concepts, principles, rules, facts and generalized information; Procedural Memory, which stores the "how to" information like driving a car; and Imagery, which stores pictures (2000).

There are a few basic concepts to understanding information processing. The first is that short-term memory is limited to, as Miller claims, seven "chunks" of information. Any more than seven and the information cannot stay in short term memory (it may be no coincidence that telephone numbers have seven digits). Another basic principle is that behaviour is that processing information in sequence is fundamental to the cognitive process, what Miller calls TOTE (Test-Operate-Test-Exit).

There are at least four models of processing, and all assume that tasks can be broken down into distinct stages of information processing. These models include bottom-up, top-down, cascade, and discrete. According to cognitive psychology, cognition is organized in a hierarchy. At the top of the hierarchy are the most complex systems such as memory and problem solving, and at the bottom are most perceptual systems (Stepnisky, 2002). Information can flow in either direction, with the importance being that information coming into the system can be influenced by what the individual already knows. Discrete processing means that information is passed to the next level only after it has been processed completely in the previous level. The final model, cascade processing, is almost the opposite of discrete; some operations can begin before others are finished, in a type of cascading manner (Trifts, 2002).

In order to teach in the information processing model, you would need to make sure you have the students' attention, focus and separate less vital

information, help students make connections between new material and what they already know, provide for repetition and review of information, present material in a very clear manner, and focus on meaning of information (OLTC, 1996).

SYSTEMS THEORY

Sometime more than 300 years before the birth of Christ, Aristotle proclaimed that, "the whole is more than the sum of its part." This declaration was to set the stage for the eventual development of the twentieth century philosophy of Systems Theory. In the society of Aristotle's time, people conceived the world in holistic and teleological terms, which defined the cosmic order. Later, however, during the scientific revolution, cause and mathematical notions replaced the holistic view. The idea that elements could be broken down to their rudiments in order to be understood was the view of the time following the scientific revolution, but this would again change (Bertalanffy, 1975).

As late as the late 1920s, philosophers and scientists began to realize that the fundamental characteristic of a entity was its organization. They realized that the examination of individual parts could not explain various phenomena. Bertalanffy, being a biologist, realized that the main goal of biology was to discover biological systems. This was termed "organismic biology." However, later, Bertalanffy realized that essentially, one could replace the word "biology" with any other word such as social group, technology, and so on, and it would hold true as well. For example, the main goal of technology is to discover technological systems.

The main goal of social groups is to discover social group systems. Obviously, the idea of a "system" must be further defined. Bertalanffy defines a system as, "a set of elements standing in interrelation among themselves and with the environment," (1975, p. 159). Heylighen, however, specifies that, "System and environment are in general separated by a boundary" (1998). Combining the two, Lucas says that, "Systems are the lifeblood of complexity thinking and can be defined as a group of interacting parts functioning as a whole and distinguishable from its surroundings by recognizable boundaries. Systems have properties that are emergent, that are not intrinsically found within any of the component parts" (1999).

Systems Theory, therefore would be defined by Heylighen and Joslyn as, "...the transdisciplinary study of the abstract organization of phenomena, independent of their substance, type, or spatial or temporal scale of existence. It investigates both the principles common to all complex entities, and the (usually mathematical) models which can be used to describe them" (1992). Simply put, Systems Theory is the study of the way an individual/organism is organized, how it works as a whole, how all the various parts work together to form the whole, and how those parts interact with each other, the whole and the environment.

There are open systems and closed systems. Open systems are those that interact with the environment, while closed systems function in isolation. This

is analogous to open and closed countries. Albania was a closed country, or system, for forty years; no one was allowed in, no one was allowed out, and there was no trade among other countries. Closed systems function the same way. Open systems, on the other hand, interact with the environment around them.

In terms of learning and cognition, this point is important. As Laszlo says, "Human beings are environmentally transacting open systems; and they do not perceive and cognize something just because it is there, or necessarily the way it is there" (1972). This theory has similarities to constructivism in that elements work together. In systems theory, just because something is, does not mean it is perceived, nor learned. Interaction must occur, and elements must be examined in terms of their whole as well as their parts. Similarly to what Aristotle believed, learning is more than just learning mathematical formulas, memorizing English poems, or reciting the periodic table of elements; learning is more than the sum of its parts.

PROGRAMMED INSTRUCTION

One day, when his daughter was in the fourth grade, B.F. Skinner went to her school to visit her math class. As he sat there and listened, he realized that the teacher, unknowingly, was violating almost every rule he had come to hold as true in the way humans learn. This realization lead this prolific inventor to run home and invent his teaching machine, (B.F. Skinner Foundation, 2002).

This teaching machine was based on his behaviourist principles of stimulus-response, or immediate feedback to reinforce the learning. Skinner believed that if children were given the right material at the right time and given reinforcement, they would learn better. In other words, Skinner's research into operant conditioning and animal learning led him to suggest that human learning could be maximized by the careful control of reinforcement for desired behaviours. This theory was eventually the basis for Programmed Instruction, or PI. During the 1950s and 60s, PI was a popular teaching method. However, in the 1970s, it began to fade away, and by 1972, was almost completely abandoned. Its popularity began to increase in the 1980s with the addition of the personal computer to primary and secondary education.

Programmed Instruction assumes that technology is not a specific machine or piece of hardware, but rather a distinct process or method for doing something. By programmed, what is meant is that the instructional content is broken down, designed, and arranged into instructional tutorials or training programmes, each with a very specific education goal and objective. PI is also very active, where the learner is engaged in the process. It is also self-paced, so that different learners can learn at the rate most comfortable to them. The Centre for Programmed Instruction gives the following example:

> *... a company has a policy manual that states how its employees are to do something, like how to greet customers as they walk in the door, or how to properly treat other employees to avoid sexual harassment. If*

> *this manual was broken down, arranged, and sequenced into instructional tutorials or training programmes according to the technology of PI, we would say that this content is Programmed Instruction (2002).*

Programmed Instruction is an essential part of computer aided or based instruction. Extensive amounts of educational software are based on PI principles—computers have become the new teaching machines.

Programmed Instruction does, however, have its drawbacks. As Ellison points out:

> *In linear programming, all users follow the same path. This uniformity prevents adaptation of content to users' needs. Pushing a button or filling in a blank does not necessarily represent active participation. Many poorer programmes require only copying tasks which actually can inhibit learning (2002).*

Additionally, PI has been found to be boring after time for the learner. The initial contact with PI is usually quite exciting, but doing repetitive tasks alone causes bored for all but the most highly motivated learner. Another drawback is that PI tends to emphasize short-answer types of exercises, which may not effectively assess nor teach deep understanding.

NEED, IMPORTANCE AND USES OF TECHNOLOGY FOR INSTRUCTION

In programme year 2006-2007, 46% of the adults enrolled in federally funded, state-administered adult education programmes in the United States were enrolled in ESL programmes (U.S., Department of Education, 2008). These adult English language learners represent a wide range of ages, nationalities, native languages, and English proficiency levels. In order to learn the language, content, and skills needed to be successful in U.S., society and the workforce, these adults need time to devote to learning. However, time spent in formal programmes is often limited. For example, adult learners in English as a second language (ESL) classes in the 2005-2006 programme year received an average of 72 hours of classroom instruction, less than 2 hours per week (O'Donnell, 2006).

Integrating technology in instruction for adult English language learners may offer the flexibility to extend learning beyond that available in a formal programme and thus increase opportunities for language and literacy learning (Cummins, Brown, & Sayers, 2007). Technology also offers access to new, dynamic opportunities for interaction among students and between teachers and students (Kern, Ware, & Warschauer, 2004). The use of technology with adults learning English can also reduce the digital divide (Hawkins & Oblinger, 2006; Khalsa, Maloney-Krichmar, & Peyton, 2007; Warschauer, Knobel, & Stone, 2004) by helping these students develop a basic understanding of computers and technology. Finally, there is evidence that the use of technology with adult English language learners may facilitate their progress towards

proficiency in English (Petty, Johnston, & Shafer, 2004; Rudes, Hopstock, Stephenson, & Zehler, 1999). This brief discusses three ways of using technology with adults learning English—onsite, blended, and online—and briefly describes examples of some specific technologies and programmes for adults learning English. (Please note that these are provided solely as examples; their inclusion here is not intended as a product endorsement.) The brief concludes by identifying issues to consider when using technology and by offering suggestions for further research.

APPLICATION TO CLASSROOM INSTRUCTION

Benefits of reconceptualizing spelling as word study. Word study encompasses both exploration and direct instruction applied to phonics, vocabulary, spelling and reading. Methodologies are explicit and incidental, multi-modal, broadly focused, and supportive of fluency as well as vocabulary acquisition and comprehension. Word sorting, word hunts, word building, and analysing word families are some practices involving the examination of words at the earliest stages of spelling development and beyond. Ultimately, word study must include "the explicit presentation and discussion of how morphology or meaning is presented in the spelling system". Bear and Templeton emphasize the value of word study for English.

Language Learners

Studying other languages more carefully is important in order to understand comparisons and contrasts that second-language learners make when they spell in English. The study of spelling in other languages leads to word studies that enrich students' vocabularies and engenders curiosity about other languages.

Three examples of actual word study initiatives are presented for comparison. Word study into a language arts and social studies unit on the Civil War. While reading, fifthgrade students sorted words by concept and parts of speech, made connections between spellings and word meanings, and studied dialects in the books they were reading. They observed that syllable stress affected inflectional endings. After reading, they created poetry and character webs that incorporated the new words they had learned.

Such authentic applications of language activities are truly exemplary. These educators took spelling out of its narrowly focused and isolated block and wove it into other subjects in the curriculum. In the second example, undertook a yearlong study to determine if time devoted to word study, as opposed to traditional spelling instruction, "led to noticeable differences over time in students' orthographic knowledge and transfer of that knowledge to untaught words in both high- and low-frequency conditions". In the study, two second-grade classrooms consisting of 48 students from the same elementary school were compared. The results of her study follow:

Teacher A used whole group instruction and a list of 15-20 spelling words drawn from the basal reader and other curricular areas. She taught word meanings,

dictionary skills, sentence writing, alphabetizing, grammar, and punctuation during the 45-minute spelling class. Teacher A taught reading to the whole group using a basal reader, and assigned pages from the basal workbook. Teacher B used Words Their Way to guide her instruction.

Individual and small group work consisted of word sorts, word hunts, and partner quizzes. Units focused on common patterns for particular sounds, and lasted from two to four weeks. Students learned word families but did not study from a spelling list. They did not take performance tests; rather the teacher periodically checked their progress with informal assessments. Teacher B taught guided reading using trade books. Eight students from each classroom who were in the Within Word stage of word knowledge were compared by taking tests on transfer words every two weeks. The transfer words exhibited orthographic patterns studied by both groups. Pretests and posttests indicated that there was no significant difference in spelling achievement between the two classes; however, in terms of orthographic knowledge, the extended word study instruction was more effective, though less significant for high-frequency words.

Experiment with word study in their classrooms. At first the teachers had reservations about the effects on their daily schedules, lack of experience or training, possible reactions from parents, and organizational issues. In response to these concerns, the mentors devised instructional activities that were incidental rather than systematic. Activities for grades 5-8, like Root-of-the-Day and word webs, Homophone Rummy and Concentration, think sheets and partner work consumed ten to thirty minutes a day and were organized around regular units of study. Word study is "a complex, multi-leveled process requiring time and practice to grasp its various aspects", and "a systematic approach to word-knowledge instruction certainly would be better" the mentors felt that an incidental approach provided a suitable jumping-off point to pique the interest of students and teachers alike.

The word-play activities they devised stimulated students' curiosity while allowing teachers time to "build their confidence, knowledge base, and implementation strategies" as they gradually became comfortable with a new philosophy directed towards the integrated teaching of not only spelling, but grammar and vocabulary as well.

WORD SORTING

Grouping words by categories is at the heart of word study. Word sorting is based on observations of word sounds, patterns, structure, and meaning, and is a key activity throughout the stages of language development. Virtually every teacher's manual in every major reading series at least nominally suggests word sorts, and even the Texas Reading First materials include word study as a best practice. Word sorting is a feature of Making Believes that word sorting should be a primary focus of instruction, at least during the early stages of spelling development.

There are numerous references in the literature explaining the dynamics and benefits of word sorts in small group settings, as part of a holistic word study programme, or as one element of a basal programme. Word sorting improves both reading and spelling as students discover generalizations that they can apply to new words they encounter in reading, and words they choose to use in their writing. Analysis of the finished product yields valuable information about a student's strategy use and developmental stage.

For those students who prefer a handson, active learning style, words sorts are particularly attractive. When assigned to partners or small groups, word sorting requires negotiation and discussion to arrive at a consensus; its collaborative aspects support Lev Vygotsky's theory that learning is socially constructed. Words can be grouped in a number of creative ways, and errors are easily corrected. The teacher can encourage students to devise their own categories for sorting— an open sort, or may prompt students to sort words by a particular feature, such as vowel pattern, rime, or even concepts — a closed sort.

In the upper elementary grades, word sorting can be used not only to support orthographic study, but also as a tool for semantic and morphological study. Word sorting entails thoughtful attention to word parts and wholes; drawing upon higher-level thinking skills to categorize words, and noticing the ways in which they are similar or different, students gradually become more fluent in their ability to examine, compare, and sort.

At that point the teacher can predict with some assurance that students aremastering particular patterns. A writing sort will confirm or disprove that suspicion. Templeton recommends writing sorts to enhance connections between "visual or spelling patterns, sound patterns, and meaning patterns" While one student pronounces the words, another student writes them under the appropriate category. Additionally, Ruth Scott and Mary Jo Fresch found that when they asked students to report their thinking while sorting words, the conceptual knowledge that learners brought to the task was revealed.

When entering classrooms in any school in America, the visitor will notice immediately a lack of empty wall space. Posters, mementos, motivational messages, and displays of students' work cover every available spot not taken up by writing surfaces or furniture. In a word study classroom the visitor will see word walls or large charts, defined by Cunningham, and cited by Pinell and Fountas in Word Matters, In their view:

A word wall is a systematically organized collection of words displayed in large letters on a wall or other large display place in the classroom. It is a tool to use, not simply display. Word walls are designed to: Support the teaching of important general principles about words and how they work. Foster reading and writing.

Provide reference support for children during their writing and reading. Promote independence on the part of young students as they work with words in writing and reading. Provide a visual map to help children remember the connections

between words and the characteristics that will help them form categories. Five secondary teachers collaborated on a book about challenged middle school and high school spellers, They Still Can't Spell (2003).

In that book Rebecca Sipe and her colleagues devoted a chapter to word walls. Their word walls feature frequently misspelled words, thematic words, homophones, words derived from Latin and Greek roots, lists of literary devices, vocabulary words, synonyms and substitutions for overworked words, poetic words, word webs, and any words students simply find colourful, unusual, and appealing. To make the word walls interactive, they devised games and activities like "human words" and card sorts.

Students also learn to generalize rules from lists on display. These authors emphasize that word walls are not meant to be static, and that teachers must exhibit a sense of wonder about language to entice students to join them in word study. To be successful, (word walls) must be built, rebuilt, and adapted so that students absorb a metacognitive sense about their language. As teachers of challenged spellers, our own excitement about words is supremely important. When we highlight words, put words on the board for students to examine and question, and encourage students to weave those words into their own writing, we are helping them begin to see that language is rich, interesting, and fun rather than something that is always academic, testable, and painful.

3

Assessment, Feedback, and E-moderation

ASSESSING LEARNING OUTCOMES

Assessing learning outcomes is concerned with determining whether or not learners have acquired the desired type or level of capability, and whether they have benefited from the educational experience. A measure of learning outcomes requires learners to complete tasks, which demonstrate that they have achieved the standards specified in the learning outcomes. In order to ascertain the most realistic and valid assessment of performance, these task(s) have to be as similar to on-the-job conditions, that is, as authentic as possible.

A major purpose of assessment in education is the improvement of learning. When focusing on the improvement of learning, it is essential to bear in mind the congruency between the learning outcomes of a course and the measures of learning achievement.

It is not uncommon to find measures of learning achievement that do not address the learning outcomes of the course. When this is the case, learner motivation in the course and their performance is adversely affected. Learning outcomes of a course must be given careful thought as quite often, insufficient attention is paid to the learning outcomes of a course.

Without a clear set of outcomes, it is difficult to determine criteria for ascertaining whether we have arrived at the place for which we set out. While some skills and competencies are easier to assess, there are many others that are more difficult to assess and grade. Therefore a range of measures of

achievement is necessary to assess the wide variety of skills and competencies that need to be acquired. In all cases however, the only fair form of assessment is one that is very transparent, with explicitly stated criteria for students. Therefore, it is important to clearly specify and communicate the basis for all assessment measures. When this is the case, assessment can serve as a powerful teaching tool.

METHODS OF ASSESSMENT

Measures of learning achievement can be classified as either criterion or norm-referenced. A criterion-referenced measure is targeted at the criteria specified in the learning outcome. Criterion-referenced measures require learners to demonstrate presence of learned capabilities in relation to specified criteria. A norm-referenced measure compares a learner's performance against that of other learners in the cohort.

This form of assessment rates student performance against the normal distribution of abilities in the population. In any learning context, a range of assessment methods may be used to determine learning achievement.

These may include:

- Actual performance on an authentic site or a simulated condition such as a model.
- Oral responses which comprise verbal and/or visual presentations to questions.
- Written responses which comprise typed or hand-written responses to questions.

However, as learning becomes more collaborative, situated and distributed in its context, conventional methods of assessment of learning outcomes become inadequate. These have to be replaced with tasks and assessment procedures that can be focused on the processes of learning, perception, and problem solving. Methods that can capture some of these processes are learning logs, critical reflections and portfolios.

In situated learning contexts, assessment can no longer be viewed as an add-on to the learning and teaching process, or seen as a separate stage in a linear process of instruction and post-test.

Assessment must become a continuous part of the learning process where it serves to promote and support learning. Assessment that is designed to promote and support learning during the course of the learning and teaching process, may be seen as serving a formative purpose in that it allows skills development to be identified, reflected upon and corrected in a continuous manner. Assessment that seeks to ascertain a final measure of learning capability often at the end of a course, serves as a summative measure.

A one-off sampling of students' work is not adequate to make a reliable judgment of the overall quality of their work. We need to examine student's work regularly and continuously without drowning either the students or staff in meaningless tasks.

BEST ASSESSMENT PRACTICES

Principles of best practices in the assessment of learning outcomes are not hard to find. The American Association of Higher Education has sponsored the development of a set of these that are available from the Web. The following are a selection of sound assessment practices drawn from these sources.

- Assessment of learning achievement must be grounded in sound educational principles. Assessment should not be considered as an end in itself. It should be seen as an effective instrument for learning improvement, and especially because students give it so much attention. Its effective use embodies the kind of learning we value for our students. These educational principles should drive not only what we assess but also how we assess. When issues about educational principles, goals and values are overlooked, assessment becomes an exercise in measuring what is easy, rather than a process of improving learning.
- Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed through performance over time. Learning is clearly a very complex process. It entails not only the development of knowledge and understanding in a given domain, but what learners can do with that knowledge and understanding. It also involves the development of desirable values, attitudes, and behaviours which affect academic success and performance outside the formal educational setting. Assessment should reflect these understandings by employing a diverse array of methods, including those that call for actual performance, over time so as to reveal change, growth, and increasing degrees of integration of what has been learned and taught.
- Assessment works well when, what it seeks to improve learning and when its intentions are transparent. Assessment of learning achievement is a goal-oriented process. It entails comparing actual performance and behaviour with intended learning outcomes and expectations. Clear, shared and realistic goals are the pre-requisites for focused and useful assessment practices.
- Assessment requires attention to the achievement of learning outcomes as well as the experiences that led to those outcomes. Teachers and students tend to place a great deal more emphasis on measures of the achievement of learning outcomes. However, to improve learning outcomes, we need to know something about students' experiences along the way. Certain assessment practices such as the use of learning logs and portfolios, for instance, can help us understand which students learn best under what conditions.
- Assessment works best when it is continuous. Learning improvement is best supported when assessment comprises a series of activities performed over the duration of study. This may mean tracking the progress of individual students or of cohorts of students and providing them with the necessary feedback and guidance.

ONLINE ASSESSMENT TOOLS

Moreover, most prominent learning management systems, such as Blackboard and WebCT come with built-in assessment tools which allow the development of questions and surveys with objective type as well as open-ended responses. These are useful in online education as they enable frequent testing and provision of feedback. However, they remain somewhat unsuited for assessing more complex learning activities such as group work and project work.

THREATS TO ONLINE ASSESSMENT PRACTICES

With online education comes increasing problems with security and the authenticity of work that is submitted by students as part of their assessment requirements. As a result there has been growing concerns about the improper use of material from the Internet. In order to combat misuse of material from the Internet, software programmes such as "Turnitin" have been developed. This software can be integrated and used with major learning management systems such as Blackboard and WebCT.

PROVIDING FEEDBACK

Assessment activities are most effective when they are accompanied with feedback. From a review of research on the effects of feedback, Kulhavy concluded that while feedback can be used to correct errors in performance, feedback is more effective when it follows a student response. However, Kulik and Kulik observed that feedback delivered following learners' response is beneficial only under controlled and somewhat artificial conditions. They recommended immediate feedback for conventional educational settings. Schimmel found that the amount of information in feedback was unrelated to its effects and Bangert-Drowns, Kulik, Kulik and Morgan showed that feedback does not always increase achievement. From these general assessments of the effects of feedback, several conclusions can be drawn about feedback and the conditions of feedback in learning.

- At the simplest level, feedback is aimed at correcting errors in understanding and performance. However, like the assessment of learning outcomes, the provision of feedback is a lot more complex process.
  - Feedback is usually designed to inform learners about the quality and/or the accuracy of their responses. This kind of feedback is specific and directly related to the performance of the prescribed task. It may be delivered directly to the learners, or mediated by information and communications technology.
  - Feedback can be directed at different aspects of learning. Some feedback is primarily designed to influence affective learning outcomes such as motivation. Others might be directed at understanding of subject matter content.

- Feedback may differ in terms of its content which is identifiable by:
  - The amount of information proffered in the feedback;
  - The similarity between information in the feedback and that in the learning and teaching transaction; and
  - Whether the feedback restated information from the original task, referred to information given elsewhere, or provided new information.

MODERATING ONLINE LEARNING

Moderation of the learning process comprises supporting learning with the help of a variety of instructional interventions. It is an integral part of any educational context and is often carried out by teachers and tutors as well as students themselves. Moderation of learning can serve several purposes. One of its most important functions is the provision of feedback on learning.

In online learning, where the teacher is not in situ during much of the learning and teaching process, moderation takes on an added degree of importance. E-moderation refers to the acts of managing, facilitating and engendering group based computer-mediated communication. Such communication can be synchronous or asynchronous. In the synchronous mode, even though the participants may be physically separated from one another, the communication takes place in real time. Synchronous computer-mediated communication is quite like a telephone conversation except that the communication channel in the former is normally text-based while in the latter it is voice-based. Synchronous voice-based communication that is mediated by computers is becoming possible with Voice over Internet software. In the asynchronous communication mode, participants involved in the discussion are active at different times, and may be separated from one another by physical distances.

In the asynchronous mode, those who wish to communicate with others can do so in their own time and place without the need for face-to-face contact or being online at the same time. Users can post messages to new or current issues in their own time where these messages are stored for others to view, comment on, and review later.

COMPUTER MEDIATED COMMUNICATION TECHNOLOGIES

Computer mediated communications technologies that enable manage and support such group-based discussion are reviewed. For a review of computer mediated conferencing technologies and a discussion of their uses see Harasim, Harasim, Hiltz, Teles and Turoff, Mason and Kaye, Naidu, Naidu, Olsen and Barrett, and Rapaport.

E-MAIL: ONE-TO-ONE COMMUNICATION

E-mail refers to electronic communication between two individuals with the help of a suitable software application such as Yahoo mail TM, Eudora TM or

Microsfot Outlook TM. Wherever the appropriate technology is available, e-mail is being very widely adopted for private and personal communication, as well as for the conduct of business activities.

E-MAIL LIST: ONE-TO-MANY COMMUNICATION

An e-mail list is an electronic mail facility that allows one-to-many communication via text-based e-mail communication. Mailing lists are often used to support discussions or information exchanges on a certain subject among a group of people who are subscribed to that mailing list. Upon subscribing to the list, each subscriber gets every message that is submitted to the list. A common form of a mailing list is as a newsgroup. There are newsgroups on just about every subject you can think of. Some groups discuss only one subject, while others cover a number of different subjects.

INTER-RELAY CHAT: ONE-TO-ONE AND ONE-TO-MANY COMMUNICATION

Inter-Relay Chat or "talk" is a way of communicating electronically with people in "real time", that is, synchronously. In this mode, participants in the chat session are able to send and receive messages almost immediately. Of course, they need to be logged on at the same time.

ELECTRONIC BULLETIN BOARDS: ONE-TO-MANY COMMUNICATION

Electronic bulletin boards are like good old fashion notice boards, except that the former are electronic spaces and the latter are physical spaces where you can stick a note with thumb tacks. Electronic bulletin boards are electronic spaces where you are able to post information for others to read at their own time and pace.

COMPUTER CONFERENCING: ONE-TO-MANY COMMUNICATION

Computer conferencing combines the functionality of electronic mail and electronic bulletin or message boards. Messages sent to a computer conference are stored in a central location rather than being distributed to individual e-mail boxes such as in a mailing list. Just as in face-to-face conference settings where participants have to move to particular rooms to hear particular speakers, participants in a computer conference are required to actively access the e-mails in computer conferences which will be waiting for action in that conference.

Once they are logged into the conference, participants can read a response and act on it. This is asynchronous communication because a participant can respond to a message or contribute to a discussion at anytime and from any

place. The messages sent to the conference are stored on the host computer from where a participant can read it, reply to it, or start a new thread.

ATTRIBUTES OF GOOD CONFERENCING SYSTEMS

David Woolley suggested that no one computer mediated conferencing system has the potential to meet all the needs of someone. Having said that, he has put forth a number of attributes of good computer mediated conferencing systems.

SEPARATE CONFERENCES FOR BROAD TOPICS

Most conferencing systems will afford this feature. Whether the discussion areas are called conferences, forums, or newsgroups, they provide a basic level of organization. Different conferences enable a focus on different subjects or topics, and allow you to establish small discrete groups or communities who are enthusiastic about particular topics. These communities can grow to cement their interests and relationships beyond the formal educational settings.

THREADED DISCUSSIONS WITHIN CONFERENCES

Most conferencing software also enable posting of messages in response to other messages such that a line of responses can be traced back to the original comment. This is called "threading" and it takes the form of a hierarchical structure, in which the topic is the starting point for a series of responses that follow. Most conferencing systems offer this capability for up to two to three responses to an original thought. Threads can get lost after that which is why it is very important to impress upon participants to keep their comments focused on the topic and to start a new thread when necessary.

INFORMATIVE TOPIC LIST

A conference participant should be able to easily see the list of the topics in a conference and the questions or issues that need a response. At the minimum, the list of topics in a conference should show each topic's title and some indication of the amount of activity in the topic: the number of responses, date of the last response, or both. The topics should be able to be sorted in some form. Participants should always be able to go back to the beginning of a topic and follow it through to the most recent response.

SUPPORT FOR BOTH FREQUENT READERS AND CASUAL BROWSERS

A computer conference should support both, frequent reading and casual browsing. Those who wish to browse should be able to choose a conference

manually and scroll through the list of topics, moving backward or forward sequentially through topics, and returning to the topic list. A frequent reader, on the other hand, should be able to move through a list of conferences, skipping topic lists entirely and getting immediately to the new, unread messages. Moreover, readers should be able to search messages by date, author, or keyword.

ACCESS CONTROL

Publicly accessible conferences will require different types of access and control than those within the context of a formal online course. In a publicly accessible conference, a conference host or moderator will need control over who can access the conference and what level of access is allowed to participants. For example, it might be necessary to give some participants read and write permission, and others read only access. The situation in a conference within a formal course would be different as every participant there will be required to have read and write access. Moreover, the host of a conference should have good tools for managing a conference discussion, such as tools for weeding out obsolete topics, archiving those that are worth saving but no longer active, and moving a divergent thread of a topic to a new topic of its own.

E-MODERATION SKILLS

While creating opportunities for learning, online learning environments also create demands on learners for new skills in managing their own learning. Being successful in such learning environments requires learners to have the ability to organize, evaluate, and monitor the progress of their learning. Not all learners possess these skills, and so they have to be taught how to take advantage of the opportunities that online learning affords. A useful way of conceptualizing key skills for managing and facilitating computer mediation conferencing has been developed by Salmon.

FORMING

The first task in the moderation of an online learning environment comprises the orientation of participants for computer conferencing. At this early stage, several skills are necessary for the formation of the group. In a formal educational setting, it is very likely that most of the participants will not know each other. So it will be important to provide them with an opportunity to introduce themselves to others in the group. This will comprise explaining their academic and other interests but more importantly their specific interest in the subject. Some students will be familiar with the conventions of computer mediated conferencing, while others will not. Some may be threatened by the technology and irritated by many of the conventions of this mode of communications. As such it may be useful to agree on some common ground rules for communicating online. At this early stage the development of respect, tolerance and trust among the group is very important.

The moderator can set the tone of the communication, and try to model those sorts of behaviours for the group to emulate. These would include things like, how much to write in each message, how frequently, and the tone of the language that might be appropriate.

Some agreement at this stage on the etiquettes of communicating on the net would be appropriate.

FUNCTIONING

This comprises ensuring that the group is on track for completing the assigned tasks. Foremost, it will include making clear the goals and outcomes of the conference.

In addition to this, providing some structure and direction for the ensuing discussions will lead to a coherent conversation on the assigned topic. Participants should be encouraged to participate responsibly, and equitably to ensure that everyone is contributing their fair share to the discussions. Participants should also be encouraged to share their ideas and opinions with group members in good faith. They ought to feel free to ask questions, and seek the opinions and support of others in the group.

FORMULATING SKILLS

By this stage in the discussion, conference participants are able to build a deeper level understanding of the subject matter. Strategies to support this will include summarizing the ideas and thread of the discussion at regular intervals, asking participants to assist and check each other's understanding of complex ideas, linking theory with practice and elaborating current material with previously learned material.

FERMENTING

This is starting to happen when participants are engaging more readily in debate and discussion about the central issues, challenging each other's ideas, meanings, reasoning and concepts. Any controversies in this regard need to be handled very carefully by the moderator, and students should be taught the skills to manage debates. Criticizing ideas without criticizing people is an important but difficult skill to develop. It is important to challenge the ideas of others but it is essential that students learn not to alienate other group members in this process.

For example, ideas can be challenged in subtle ways by asking questions, suggesting alternatives, asking for their reasoning and justification of arguments.

Students could be encouraged to find out how the thinking and reasoning of group members' differ and how the different ideas could be integrated into a smaller set of propositions on the subject. At the end of this process, the moderator must bring the discussion to some sort of a close.

ONLINE LEARNING COURSE DEVELOPMENT MODELS

CONTEMPORARY ONLINE LEARNING PRACTICES

Contemporary online learning environments are characterized by a growing use of commercially produced learning management systems, which enable online access to subject matter content, asynchronous online discussions, collaborative learning activities, and online assessment. Organizations which seek to adopt online education are quickly realizing that it is not a cheap or easy option. Online education requires a great deal of resources and careful planning.

Some of the strategies used as part of this level of planning include breaking large numbers of students into smaller groups, assigning them specific tasks, and providing them with direction and specific guidance, and setting timelines for discussion. Educators are becoming aware that open, unguided asynchronous online discussion forums can be very ineffective. Students will not give open-ended discussions their time and attention if they are not directed at specific learning or assessment activities.

Most online learning management systems support collaborative learning and small group work, which are widely recognized as desirable educational practices. They enable students to be easily grouped to work on a range of learning activities either online or offline. More importantly, LMSs enable small group work deliberations and activities to be accessible to teachers and tutors to see, critique and comment on. In conventional educational settings, these important aspects of learning would have been accessible only to the group members. Having access to these deliberations gives teachers added insights into group processes and the contributions of individual members to group work. This insight is critical in promoting fairer assessment practices of group work.

Naturally, this kind of educational practice makes student work more visible and open to scrutiny just as the online learning and teaching environment breaks down the barriers to the lecture room walls and makes the teacher and the teaching more visible and open to critique. Some of the operational and administrative issues that are central to developing and implementing a successful online-learning programme include:

- Adopting cost-effective on-line learning management systems that are scalable, and hopefully customizable in order to cope with large numbers of students, and serve the needs of particular contexts and a wide variety of approaches to teaching and learning.
- Adopting learning and teaching designs that maximize the input of the teachers and tutors, and do not leave students floundering in an open and flexible learning space.
- Closely aligning learning and assessment activities in order to ensure that students are more actively engaged in their learning and taking responsibility for their own learning.

- Breaking down the distinctions between "teacher" and "taught" as computer-based conferencing enables students to take on a tutorial role as they learn how to learn from each other.

MODELS OF COURSE DEVELOPMENT

Online-learning environments with their dependence on technology are very different, in several important ways from conventional educational settings. In conventional educational settings much of the responsibility for teaching and learning is in the hands of the teacher who is also the subject matter expert. In online-learning environments, the teacher who may also be the subject matter expert is no longer in complete control of all the activities. The technology for instance is usually managed and serviced by someone else. Someone else may also manage the content that is delivered by the technology, even though the teacher in charge may have developed it. Many of the online-learning environments are the result of a team effort, which brings together a wide range of expertise including subject matter experts, learning management system and web developers, graphic artists, and systems engineers to produce a course.

This team approach to course development has been widely used especially by distance education institutions. Nevertheless, there are less collaborative approaches as well, in which a single subject matter expert might be able to do everything, or do it with minimal and occasional help. The choice of a particular approach to the development of an online-learning course is based on several factors including the academic tradition and resources available to the organization. Institutions that are dedicated to online and distance education have tended to adopt a more collaborative course team approach.

Conventional campus-based educational providers, on the other hand have tended to adopt a lesser collaborative approach. In any event, the development of an online-learning course comprises a new experience for many. It calls for new skills such as in emoderation and some de-skilling as well. Old habits die hard, and when faced with circumstances that render some of one's previous experience "irrelevant" there is quite a lot of uneasiness, loss of confidence, disillusionment, hostility, and at times withdrawal from the activity altogether.

TYPES OF ONLINE-LEARNING COURSES

Robin Mason of the United Kingdom Open University has suggested that most online-learning courses sit on a continuum of a "partially online" or a "fully online-learning course". A "partially online" course is one that integrates existing resource materials that are available either in print or non-print form such as textbooks, *etc.*, with some elements of online learning. This might include the use of a learning management system or simply a mailing list for some asynchronous discussion. Such courses promote the concept of what is commonly referred to as "blended learning", where more than one mode is used to teach a course.

Most distance educators have known such courses as "wrap around courses" because much of the teaching and learning activities in such courses are wrapped around existing resource materials such as textbooks. A "fully online" course, on the other hand, is one that will have most of its learning and teaching activities carried out online.

I say "most of its learning and teaching activities" because invariably everything about a course could not possibly be carried out online. Moreover, it might not be advisable to do so. For instance, students would always be studying away from the computer from printed materials, textbooks and other resources from libraries.

There would be no real need to put these online, and it might not be possible to do so for reasons that have to do with costs and copyright laws. Mason calls this "integrated courses".

WRAP AROUND MODEL

This model of online-learning relies on study materials, which may comprise online study guides, activities and discussion "wrapped" around existing previously published resources such as textbooks or CD-ROMs, *etc.* This model represents a resource-based approach to learning, as it seeks to use existing material that is relatively unchanging and is already available online of offline. Such courses, once they are developed, can be taught or tutored by persons other than the course developers.

Collaborative learning activities in the form of group work, discussion among peers, and online assessments may be supported by computer conferencing, or mailing lists. Unfortunately, quite often, these online learning elements tend to be added to the course and do not form an integral part of the assessment requirements of the course.

THE INTEGRATED MODEL

This model is closest to a full online-learning course. Such courses are often offered via a comprehensive learning management system. They comprise availability of much of the subject matter in electronic format, opportunities for computer conferencing, small group-based collaborative online learning activities, and online assessment of learning outcomes.

For the moment though, some of the subject matter content will be best-accessed offline in already published textbooks and other sources. The learning and teaching in these courses takes place in the computer conferences, in which the prescribed readings and the assigned tasks are discussed. Much of this learning and teaching activity is fairly fluid and dynamic as it is largely determined by individual and group activities in the course.

To some extent, this integrated model dissolves the distinctions between "teaching" and "learning" in favour of the facilitation of learning.

MANAGEMENT AND IMPLEMENTATION OF E-LEARNING

PRECONDITIONS OF E-LEARNING

E-learning, like any organized educational activity is a very complex undertaking. Many organizations seeking to engage in elearning activities quite often overlook the fact that its successful deployment requires the same level of diligence and rigour in its planning, management and implementation that is necessary in setting up conventional education systems.

In fact, e-learning has added elements such as the technology infrastructure that require attention far beyond that is necessary in conventional educational settings. Furthermore, e-learning is neither a cheap nor an easy educational option.

It does not offer a quick fix for problems associated with dwindling enrollments, distance education, or poor teaching and learning. Lack of careful planning and implementation of elearning can actually lead to decreasing standards and morale, poor performance in learning and teaching, and wasted resources and loss of revenue.

Any efforts to embark on e-learning must be preceded by very careful planning. This would necessarily comprise, strategic and operational planning that are consistent with the values, mission and goals of an organization. Educational organizations that have a history of employing alternative approaches to learning and teaching such as distance education will have many of the prerequisites and dispositions for e-learning already in place which they can easily capitalize and build upon.

However, conventional campus-based educational organizations that have traditionally relied on residential face-to-face classroom-based learning and teaching activity would need to reconsider their values, mission and goals of educational provision in order to adequately accommodate the adoption of e-learning activities. A critical component of this orienting or reorienting for the successful adoption of e-learning is institutional sponsorship.

For e-learning to succeed in any setting, there has to be complete support for the initiative from the highest levels. This is important not only because it will have implications for funding allocation for any such new initiative, but also because of its implications for the mindset of the rest of the organization. Staff needs to buy into the initiative and be committed to its success.

Without this kind of a ground swell of support and commitment from its foot solders, any such new initiative is doomed for failure in any organization. These are the preconditions for the successful deployment of e-learning, and they have to be in place as part of the preparation for its deployment in any organization. Without adequate attention to these preconditions, e-learning is unlikely to achieve its full potential in any organization, no matter how robust and reliable is its technology and the infrastructure to support it.

ADMINISTRATIVE REQUIREMENTS OF E-LEARNING

Like any organized educational activity, e-learning needs to be very systemically managed. Foremost this will include attention to the technology and the infrastructure that is necessary to support it. It will include different approaches to course design and development and strategies for generating and managing subject matter content from that which is suitable in conventional educational settings.

THE TECHNOLOGY

While this is crucial to the success of any elearning activity, technology is not the driver of the initiative. It is there to serve an educational function and such, it is a tool for learning and teaching. However, it has to be robust, reliable and affordable. It is critical to ensure that this is so, just as it is important to ensure that in a classroom-based educational setting, the classroom is available and it is comfortable, and it has the necessary equipment such as tables and chairs and other tools for teaching and learning to take place.

Most teachers and students in such educational settings would take these facilities for granted and they will be unaware of what goes on behind the scenes to ensure that the classroom setting works in the way in which it is expected to work. Staff and students alike would be very agitated if the computer, the projector, or the lights in the classroom did not work, as that would be very disruptive to their learning and teaching activities.

In the same way e-learning technology needs to work just as transparently and fluidly to allow teachers and students to concentrate on learning and teaching and not be distracted by the technology. If teachers and students have to be taught to operate this technology, then there should be processes and programmes in place for this training to occur, routinely.

COURSE DESIGN AND DEVELOPMENT

Like any other organized educational activity, e-learning, is a team effort, as a number of people and a range of expertise need to be brought together to make e-learning work. In conventional educational systems, course design and development is the sole responsibility of the subject matter expert who is also the teacher. E-learning will require the delivery of that subject matter content in alternative forms such as online or on a CD-ROM. Some teachers are able to produce their content themselves.

However, this might not be the best use of their time and expertise in most educational settings. A more efficient and effective model of course development is the team approach, which brings together people with subject matter knowledge and expertise in the development of technology enhanced learning materials. However, the establishment and nurturing of such a team process is not to be taken lightly as it has implications on where the boundaries lie for various types of expertise and on the costs of supporting it across a large organization.

SUBJECT MATTER CONTENT MANAGEMENT

In conventional educational settings, the generation and presentation of the subject matter content is the sole responsibility of the teacher. In e-learning, while the teacher may still be generating this content, for it to be made accessible to the learners, it needs to be modified, enhanced and presented in a form that is amenable to the technology that is in use. Content once generated will need to be updated in order to retain its currency and relevance.

For this to happen, academic staff and other content developers will need expert assistance with learning and instructional design activities. They will need to be supported in the design and development of such self-study materials in alternative media forms. Permissions will be required in the form of copyright clearance to publish some of this material in such form. In large educational settings, this will create a substantial amount of work, which will require enough trained staff and appropriate procedures and processes.

IMPLEMENTATION REQUIREMENTS OF E-LEARNING

In conventional classroom-based educational settings, teachers spend a great deal of their teaching time in subject matter content presentation. This activity usually takes the form of lectures where teachers go through a body of subject matter content. Students on the other hand, spend a great deal of their study time in sitting in lectures taking down lecture notes. Irrespective of whether this is a good or bad educational practice; it is certainly an inefficient and ineffective use of teachers' and students' time.

If subject matter content needs to be presented, then there are surely several more efficient and effective ways of presenting it. Sitting students down in a lecture room and having them take down notes, often not so accurately, is certainly not one of those ways.

E-learning, with its use of information and communications technology, enables the presentation of subject matter content in alternative forms, as such freeing up lecture time which can now be more usefully devoted to the facilitation and support of learning activity. However, e-learning in itself does not guarantee efficient or effective learning and teaching.

For it to be efficient and effective, a great deal of care and attention needs to go into its implementation. This comprises attention to the recruitment and registration of students, facilitating and supporting learning, assessing learning outcomes, providing feedback to learners, evaluating the impacts of e-learning on the organization, and a host of other issues related to these functions.

STUDENT REGISTRATION

Most educational and training organizations have rigorous systems and processes in place to manage student registrations and their graduation. Those who choose to adopt on-line learning would want to also ensure that they are

able to recruit, registrar and manage their students online in the fashion of e-commerce and e-business. Doing so would be consistent with an ethos and philosophy of making one's registration processes accessible online. This would require administrative systems to be in place and that the staff members are appropriately trained.

LEARNER SUPPORT

In the context of e-learning, learner support takes on an added importance, as learners become separated in time and place from the teacher and the educational organization. This does not mean that necessarily more learner support is required. What changes is how learner support is provided, where and when and how often it is provided and who provides it. An online learning course, may not be supported and facilitated by those who developed these courses.

ASSESSMENT OF LEARNING AND THE PROVISION OF FEEDBACK

While in e-learning, the fundamental and guiding principles of assessment of learning outcomes and providing feedback on learning remains the same as that for any other educational setting, what changes is how some of the learning outcomes can and might be assessed and also how feedback may be provided. Most educational settings must also deal equitably and fairly with unfair practices such as plagiarism and authenticity of student work. E-learning because of the flexibility it affords in terms of time and space independence are more prone to unfair learning and assessment practices. Opportunities for these occurrences need to be properly managed.

EVALUATION OF THE IMPACTS OF E-LEARNING

It is crucial to have processes in place for knowing how you are doing with what you have initiated. This will include how your staff and students are engaging in e-learning. Without this kind of evidence, you are in no position to know how you might be traveling and what changes and/or improvements are necessary.

Evaluation of impacts is often neglected or inefficiently carried out in most educational settings. Evaluation of the impacts of your processes should be closely integrated into the planning and implementation of any e-learning activity.

TEACHING MACHINE

Can we build a new breed of software with enough 'commonsense' to reason in useful ways about ordinary human life? Imagine if your cell-phone were

smart enough to switch to silent mode when you entered a movie theatre but alerted you during the film if a relative were to call from the hospital, but not when your friend called from the pub. Imagine if when you complained: 'I can't get a good night's sleep', your search engine suggested a mattress sale at a nearby store. Imagine if, when you entered a child's birthday party into your electronic calendar, it asked: 'Do you think a kite would be a good birthday gift?'

Such abilities are beyond today's machines largely because they lack even the most rudimentary understanding of people and the structure of ordinary human life. They do not know anything about, for example:

- The kinds of things we typically do,
- The objects we interact with and why,
- The consequences of actions in different situations,
- The kinds of relationships we have with one another,
- The things we like and things we do not like,
- The places we find familiar and the things we do there,
- The feelings and emotions that motivate us.

Instead, our machines today are mindless tools that possess no understanding of why a typical person would need to use them.

As a result they are inflexible, unfriendly, and often unnecessarily complicated — they have no ability to adapt to new circumstances, understand the context of their use, or make good guesses at what we wish for them to do, regardless of how obvious it may seem to us.

Can we build machines that can actually understand people, and especially, that can understand our goals and help us achieve them? Our research at the Media Lab is focused on giving machines this kind of understanding. We are interested in the large-scale structure of the human conceptual system, and are working on embodying such structures within our machines, in order to make them more understanding, helpful, and to make our interactions with them more seamless.

MODULES

E-learning key solutions:

- Custom course creation
- Existing content conversion
- Customized learning product creation
- Conversion of books to interactive formats
- Learning Management System LMS integration
- Online assessment tool creation or integration
- Multimedia interactive training
- Online game development
- Web based tutorial design and development
- Media production-video, audio, multimedia, graphics.

LEADERSHIP STYLE, SCHOOL CLIMATE, AND THE INSTITUTIONAL COMMITMENT OF TEACHERS

Organizations are established to serve specific purposes and to carry out designated missions. To this end, they provide resources, infrastructure, and necessary training to their employees to enable them to accomplish goals and objectives directed towards the greater mission. In a reciprocal way, it is important that employees of an organization share the vision of their organization, be committed to its mission and goals, and give unreservedly of themselves in order to attain these purposes. The Seventh-day Adventist (SDA) Church operates a global network of educational institutions. In the Philippines, under the jurisdiction of the Southern Asia-Pacific Division, the SDA Church has established a university, 5 colleges, 22 secondary schools, and 307 elementary schools (Seventh-Day Adventist Yearbook, 1998). All these institutions share a basic philosophy and mission, and operate under similar educational policies.

Students' preparation for selfless service to God and to society is taken seriously by the SDA educational system. E. G. White (1952), a respected writer and visionary of the church, emphasized the solemn responsibility of providing an all-round, God-centred, service-oriented, faith-based, and kingdom-directed education for young people. Such an agenda, however, requires a considerable amount of vision sharing and commitment.

Teacher commitment may be directed towards a number of entities; for example, to the occupation of teaching, to student success, to specific programmes, or to the school as an organization. Of these, the teachers' commitment to their schools as organizations served as the focus of the present study.

Given that commitment incorporates an attitudinal dimension, certain conditions have been found necessary for its development. The leadership behaviour of the principal, for example, can be a major influence on the level of teacher commitment to a school (Campisano, 1992). A second factor assumed to significantly influence teacher commitment level is the quality of the school climate. Both of these constructs were also explored in this study.

RELEVANT LITERATURE

The conceptual framework of the study was based on the Steers (1977) model of the antecedents and outcomes of organizational commitment. This model includes personal characteristics (*e.g.*, age and tenure), role-related characteristics (*e.g.*, job scope and role ambiguity), structural characteristics (*e.g.*, decentralization and organization size), and work experiences (*e.g.*, leadership style and organizational climate) as antecedents of organizational commitment. In this study, the focus was directed towards certain aspects of the work experiences of secondary school teachers, namely the leadership style of principals and school climate. The expected outcomes as per the model are teachers' (a) desire to remain with the school, (b) intent to remain with the school, (c) improved attendance, (d) low turnover, and (e) increased effort at the job.

LITERATURE FOCUSING ON ORGANIZATIONAL COMMITMENT

Commitment embodies a sense of being bound emotionally or intellectually to some course of action, which may include a person's relationship with another individual, group, or organization (Huntington et al., 1986). It has also been defined as loyalty, identification, and involvement with some appropriate object (Buchanan, 1974). In an organizational setting, such loyalty involves feelings of attachment which develop as individuals share values in common with other members of the group. This identification, expressed through the adoption of organizational goals, occurs when individuals take pride in the organization, participate with intense interest in its activities, and speak positively about their connection with the organization.

Prior research has identified a number of factors that are related to organizational commitment, both in positive and negative terms. In educational institutions, positive factors include reduced role ambiguity, teacher empowerment, clear organizational mission (Varona, 1991), and encouragement of innovation, continual professional development, and shared decision making (Veitenheimer, 1993). Other factors identified in studies involving school teachers were a confronting and cooperative conflict resolution style of principals, as opposed to a withdrawing conflict resolution style, principal-teacher goal congruence (Derczo, 1987), and religiosity of the teacher (Ciriello, 1987).

Certain school and personal factors have been found to be negatively related to the organizational commitment of teachers. These include nonalignment of personal and organizational goals and values (Menzies, 1995), lack of communication and trust (Varona, 1991), high levels of interpersonal conflict (Booker, 1990), and an imposing or withdrawing conflict resolution style on the part of principals (Hajzus, 1990). In essence, it appears that organizational commitment may be fostered by minimizing these inhibiting factors that reduce commitment and by enhancing promoting factors such as administrative support, empowerment, collegiality, and a collaborative climate.

LITERATURE FOCUSING ON LEADERSHIP STYLE

Leadership can be broadly defined as the relationship between an individual and a group built around some common interest wherein the group behaves in a manner directed or determined by the leader. The leader thus becomes the interpreter of the interests and objectives of the group, as the group in turn recognizes and accepts the interpreter as its spokesperson (Aquino, 1985). Leadership in a school setting is the result of the way principals use themselves to create a school climate that is characterized by staff productivity, student productivity, and creative thought (Ubben & Hughes, 1987). Consequently, the principal's qualities and behaviour determine to a large degree how the subordinates feel about their organization (Eblen, 1987). A particular leadership style may either foster or hinder teacher commitment.

Leadership styles have been broadly conceptualized as a leadership based on power, or based on relationships. The "power" concept of leadership, researched by Kurt Lewin and his associates at the University of Iowa (Lunenberg & Ornstein, 1991), has identified at least three basic styles of leadership: authoritarian, democratic, and abdicratic (laissez-faire).

The "relational" concept of leadership, which is employed in the present study, began with the idea that poles of task-priority and people-priority were at opposite ends of a single continuum, and that a balance between both extremes made for strong, supportive, and respected leaders (Tartar et al., 1989). However, leadership studies (Stogdill, 1962) conducted at the Ohio State University in the late 1940s, found that various combinations of these two concept were obvious in leaders and that the approaches to leadership were best represented in terms of two dimensions—initiating structure behaviours and consideration behaviours.

Initiating structure reflects the extent to which the leader attempts to organize work, work relationships, and goals. A leader high in initiating structure emphasizes schedules and specific work assignments, establishes channels of communication, and sees to it that the followers are working up to capacity (Lunenberg & Ornstein, 1991). C*onsideration* reflects the extent to which the leader maintains job relationships that are characterized by mutual trust, respect for subordinates, and regard for their feelings. A leader high in consideration listens to staff members and is approachable.

To briefly summarize, a *Quadrant I leader* is low on consideration and high on initiating structure. This leader is production-oriented and interested in getting the work done, often forgetting in the process that he or she is dealing with human beings. The *Quadrant II leader* has evidences both consideration and initiating structure behaviours.

Such a leader is efficient and effective in managing both people and tasks. The *Quadrant III leader* is high on consideration but low on initiating structure. This leader maintains a friendly relationship with the subordinates and is concerned about subordinate welfare, but is ineffective in getting things done. The *Quadrant IV leader* is low on both consideration and initiating structure. This leader's management is accompanied by group chaos and ineffectiveness.

This present study uses the model of the Ohio State studies involving the two leadership behaviour dimensions of consideration and initiating structure and the four leadership quadrants in order to determine the dominant leadership style of the school principal.

In terms of prior research, House (1971) found that styles of leadership that focused on initiating structure were most valuable when tasks that were stressful or dissatisfying, while the consideration styles were most appropriate for tasks that were clear and routine in nature. The styles high in initiating structure were also related to higher productivity, but tended to generate higher employee grievance rates and turnover. The consideration styles, by contrast, have been associated with satisfied subordinates and fewer absences (Immegart, 1988).

Lunenberg and Ornstein (1991), however, point out principal leadership behaviours that are high both in consideration and initiating structure also result in high satisfaction and performance among school teachers. Overall, it seems that leadership style could be one of the best predictors of employee commitment (Glisson & Durick, 1988).

LITERATURE FOCUSING ON SCHOOL CLIMATE

School climate has been defined as the "feel" of a school (Halpin & Croft, 1963), as its "collective personality" (Norton, 1984). Climate is the human environment within which the teachers of a school do their work. Like the air in a room, climate surrounds and affects everything that happens in an organization (Freiberg, 1983). As one moves from school to school, it is possible to note that one school feels different from another. This is primarily the result of school climate.

During the past three decades a substantial amount of research has been conducted on the importance of school climate. Halpin and Croft's (1963) landmark study of organizational climate yielded the *Organizational Climate Description Questionnaire* (OCDQ), an instrument to assess the climate of organizations. This instrument has been used extensively in hundreds of research studies to date. In 1986, Hoy and Clover revised the OCDQ for use in elementary schools, while Kottkamp, Mulhern, and Hoy (1987) adapted the instrument for use in secondary schools.

Halpin and Croft (1963), in their study of the organizational climate of schools, conceived of climate as being either open or closed. They came up with six types of climates on a continuum: open, autonomous, controlled, familiar, paternal, and closed. These climate types were based on various degrees of four teacher-related factors: hindrance, intimacy, disengagement, and esprit; and on four principal-teacher relations factors: production emphasis, aloofness, consideration, and thrust. An *open* climate, for example, is characterized by low hindrance, low disengagement, average intimacy and high esprit of teachers; and low aloofness, low production emphasis, and high thrust and consideration of the principal. By contrast, a *closed* climate is characterized by high disengagement, high hindrance, low esprit, and average intimacy of teachers; and high aloofness, high production emphasis, and high thrust of the principal. In essence, the degree of openness of a school climate is the result of the quality of human interactions in the school. The present study employs this theoretical concept of school climate.

In prior research, an analysis of the perceptions of parents, teachers, and students regarding the climate of their schools was conducted biannually in the United States from 1979 to 1982 and discovered that the climate of the school was a function of several school-related factors (Freiberg, 1983). These factors included leadership qualities of principals, teacher-colleague relations, parent-teacher relations, student-teacher interpersonal relations, student-teacher instruction-related interaction, school buildings and facilities, and student-peer

relations. Other indicators of a healthy school climate were identified in a study by Howard, Howell, and Brainard (1987). These indicators were the degree of respect, trust, opportunity for input, cohesiveness, caring, high morale, and school renewal.

Based on research in the Philippines, Andres (1981) identified eight climate factors that motivate Filipino employees to be efficient and productive in organizations. These factors were (a) a personalistic family atmosphere in the organization; (b) attention to the emotional aspect of the organization's life, such as individual self-esteem, reciprocity between management and employees; (c) respect for human dignity; (d) egalitarian treatment; (e) flexibility in work assignment, schedules, and deadlines; (f) supportive role on the part of the officers; (g) open communication and complete and genuine information; and (h) a cooperative and fraternal reward and promotion system. These factors may be derived from the fact that Filipino culture tends to be relationship-oriented and the Filipino employee perceives an open climate to be the result of a family atmosphere and supportive leadership in the organization.

LITERATURE FOCUSING ON RELATIONSHIPS BETWEEN PRINCIPAL CONSTRUCTS

A number of studies have explored the relationship between the leadership style of principals and teachers' commitment to the school. Findings indicate that in order to build strong teacher commitment, principals must provide strong, directive leadership in setting and developing school goals, creating a unity of purpose, facilitating communication, and managing instruction (Cruz, 1995). Similarly, high correlations have been reported between the principal's leadership behaviours of buffering, caring, involving, and praising, and faculty trust in the principal and commitment to the school (Depasquale, 1996; Meade, 1994; Yakmalian, 1995). Other studies have highlighted a positive correlation of teachers' perceptions of the principal's leadership behaviour with teacher morale (Houseknecht, 1990) and commitment to the school (Marschilok, 1993) and to the teaching profession (Everett, 1991). In the Philippines, David's (1990) study of lay teachers in selected Catholic elementary and secondary schools reported a positive relationship between a democratic leadership style and teachers' organizational commitment. Overall, these studies strongly suggest that there may be important relationships between a principal's leadership style and teachers' organizational commitment.

A number of studies have explored the relationships between teacher commitment and factors of school climate. Strong associations have been reported between organizational commitment and climate openness (McDaniel, 1992), collegiality (Combs, 1995; Firestone & Pennel, 1993), collaboration, and teacher empowerment (Hornung, 1995). Overall, these studies make a strong case for a relationship between the climate of a school and the level of teacher commitment.

It also seems quite evident from prior research that significant relationships could be expected between leadership style and school climate. Al-Gasim (1991),

for example, found a strong relationship between an open climate and principals who were high in both consideration and initiating structure dimensions. Similarly, Bailey (1988) concluded that school principals who desire to improve their school climate need to exhibit both high task-oriented behaviours and high relationship behaviours with their teachers. Other studies have likewise underscored the importance of the leadership style of the principal to the development of a positive school climate. Overall, the evidence seem quite strong that since the school climate is the reflection of the quality of human interactions in the school, the leadership behaviour of the principal is an important factor in building an open, facilitative climate at all educational levels.

Six demographic variables of teachers were included in this study—four personal factors of gender, age, marital status, and educational attainment, and two job-related factors of length of teaching experience and length of teaching in the present school. The intent was to further explore the relationship of these factors to organizational commitment. In prior research, women have been found quite consistently to be more committed than men to their employing organizations (Hrebiniak & Alutto, 1977; Reyes, 1992), and married employees more committed than those who were unmarried (Steers, 1997). Organizational commitment has been found to relate positively with age, and inversely with educational attainment. Research finding, however, seem to be mixed regarding the relationship between length of teaching experience and organizational commitment (*e.g.*, positive correlations in Cheng, 1989 and Kadyschuk, 1997; negative correlations in Reyes, 1992). Population differences may account for these discrepancies. Finally, length of organizational tenure has been found to be a significant positive predictor of the organizational commitment of employees. This was also the case in a study of teachers in the Philippines.

Based on this review of the literature, it was hypothesized that significant relationships would exist between principals' leadership style, school climate, and the organizational commitment of teachers. Furthermore, it was expected that certain demographic variables would relate significantly to organizational commitment.

RESEARCH METHODOLOGY

The purpose of this study was to investigate the predictive capacity of the dominant leadership style of principals, the perceived school climate, and certain demographic variables of teachers, in terms of the organizational commitment of teachers in the Seventh-day Adventist (SDA) secondary schools in the Philippines.

Validated instrumentation was used to measure respondents' perceptions of the three major constructs in this study. The *Organizational Commitment Questionnaire* (OCQ), developed by Mowday et al. (1982), was used to measure the organizational commitment of teachers. The *Leadership Opinion Questionnaire* (LOQ), adapted by Florido (1986) from an instrument developed by Fleishman (1969), was used to measure teacher perceptions of the dominant

leadership style of principals. Finally, the *Organizational Climate Description Questionnaire—Rutgers Secondary* (OCDQ-Rs), a revision by Kottkamp et al. (1987) of the original OCDQ developed by Halpin and Croft (1963), was used to measure teacher perceptions of the climate in their schools. Six demographic variables were also collected. These were age, gender, marital status, educational attainment, teaching experience in other schools, and length of teaching in the present school. The last two variables were summed to calculate the total teaching experience variable which was then used in subsequent analyses.

The unit of analysis in this study was the teacher. The population of this study consisted of teachers in all Seventh-day Adventist (SDA) secondary schools in the Philippines during the 1998-99 school year. At the time of study, there were 22 SDA secondary schools in the Philippines, with a total of 308 full-time teachers. The intended sample in this study consisted of all teachers in these schools, with the exception of 2 schools which could not be contacted due to remoteness. The final sample thus consisted of 274 teachers (89% of the population) from 20 schools. Usable data was received from 227 teachers, representing a return rate of 83%.

Statistical analysis included Pearson product-moment correlations and step-wise multiple regression analysis. The level of significance testing was set at a =.05 for all research questions. Bonferroni alpha adjustment was used to account for multiple testing.

DEMOGRAPHICS

As might be expected, there were almost twice as many female as male teachers. It appears that secondary-level teaching is more attractive to Filipino females than to males, or that male teachers in the Philippines have more options available to them at other educational levels, such as in tertiary education. The fact that nearly two-thirds of the teachers were between 21 to 40 years of age indicates that SDA secondary school teachers in the Philippines constitute a young set of individuals. This may be explained either by an expanding educational system or, more likely, by the fact that older teachers may move into administrative positions or into teaching positions at the tertiary level, perhaps with a commensurate rise in their own educational attainment.

Given that 80% of the secondary level teachers held only a bachelor's degree or less is cause for concern. It may be that provisions for upgrading programmes of teachers are nonexistent or that not enough teachers can be accommodated in these programmes to change the ratio appreciably. Furthermore, the few teachers who do get upgraded may either move into administration or into service in other educational levels.

Half of the respondents had taught five years or less at the present school. Although it is a fact that the teaching sample was quite young overall and that nearly two-thirds of the teachers had less than ten years of total teaching experience, this seems to be the trend similar to that reported in prior studies by Tobing (1976) and Salazar (1978). Tobing had found that 41% of his sample

from private high schools in the Caloocan area in the Philippines had taught for 1 to 6 years, whereas Salazar's study of SDA secondary school teachers in Northern Philippines reported that 51% of the respondents had taught in their present school for less than 6 years. This finding may also indicate a high turnover rate and could merit further research.

ORGANIZATIONAL COMMITMENT

The overall mean of 5.4 for organizational commitment of teachers in the SDA secondary schools was moderately high compared to mean levels obtained in prior studies. For example, Mowday et al. (1982) reported mean levels ranging from 4.0 to 6.1 in the nine samples to whom they administered the OCQ. For denominationally sponsored educational institutions in the Philippines, however, this finding may be quite normal. David (1990), for example, reported a mean level of 5.6 for the organizational commitment of lay teachers of selected Catholic schools in the Philippines. A mean level of 5.6 for organizational commitment was also reported by Oberholster (1998) in his study of teachers in six SDA colleges in the Philippines.

Given the religious orientation and educational philosophy of the SDA organization to which the schools belong, it was believed that teachers would indicate a high level of commitment to their schools. This seems to indeed be the case and is in line with prior research that indicates that teachers in parochial church-operated schools typically exhibit a high level of commitment (David, 1990; Tarr, 1992).

Such high commitment levels in SDA secondary school teachers in the Philippines are encouraging as they imply that the teachers in these schools support the values and mission of their schools and actively assist their schools in achieving organizational objectives.

Although this study focused explicitly on the commitment of the teacher to the educational institution where service was rendered, teacher commitment in the SDA schools could well be to the larger organization, first, and then to the individual school. Perhaps a comparative study of commitment to the SDA denomination as contrasted with commitment to the SDA educational system overall and to the particular institution would be fruitful.

LEADERSHIP STYLE

The two leadership behaviour dimensions of consideration and initiating structure were assessed in this study in order to determine the leadership style of principals. This study found these two dimensions to be orthogonal. This fact of orthogonality lends empirical support to the theoretical perspective utilizing these two dimensions to form the four leadership style quadrants (Stogdill, 1962).

In this present study, 79% of the respondents perceived their principals to be in leadership Quadrant II, characterized by high consideration and high initiating structure behaviours. Stogdill (1962) stated that a Quadrant II leader was efficient

and effective in managing both tasks and people. Thus a balance between the two leadership dimensions seems desirable, especially in improving the school climate (Bailey, 1988). However, several studies pointed out that a leadership style leaning more towards consideration will tend to build better teacher commitment (Burns, 1990; Fjelstad, 1990) and a more open school climate.

Ratings on the underlying Consideration subscale in this study were generally higher than on the Initiating Structure subscale. The Consideration subscale mean of 71.3, out of a possible total of 100, indicated that principals were perceived as often displaying considerate behaviour. By contrast, the Initiating Structure subscale mean of 58.9, out of a possible total of 100, indicated teacher perceptions of only occasional display of initiating structure behaviours. This finding is not surprising as the Filipino people are relationship-oriented and tend to be warm and friendly (Alegre, 1994; Andres & Ilada-Andres, 1987). In the Philippines, as in much of Asia, interpersonal relations tend to take priority over structural achievements. The importance of the consideration dimension of leadership style seems to have important implications in terms of organizational commitment. A supportive and considerate leadership behaviour has been found to build faculty trust (Depasquale, 1996) and organizational commitment (Salancik, 1977).

RELATIONSHIPS OF LEADERSHIP STYLE AND ORGANIZATIONAL COMMITMENT

Theory had postulated that there should be a strong relationship between leadership style and organizational commitment of teachers.

Salancik (1977), for example, observed that high levels of employee commitment should be associated with supervision that was not overly tight or close. Mowday et al. (1982) reported two studies that found the organizational commitment of employees to be related to the initiating structure leadership behaviour. Thus, organizational commitment should quite strongly relate to leadership styles defined in terms of consideration and initiating structure leadership behaviours.

However, the present study found only a small proportion of shared variance (3%) between but two of the four leadership styles and the organizational commitment of teachers. Perhaps, in reality, the particular leadership style is not all that crucial after all, at least not as it pertains to the organizational commitment of teachers.

Examining the underlying subscales of leadership behaviours, however, revealed a new dimension. There was a much stronger relationship between the consideration leadership behaviour of principals and the organizational commitment of teachers, accounting for some 16% of the variance. Such a relationship indicates that under a considerate leadership, teachers evidence greater commitment to the organization.

This finding that teachers feel committed to their school when the principal's leadership style is supportive and enabling is in harmony with prior studies.

David, for example, found a democratic leadership style in selected Catholic schools in the Philippines to be significantly and positively related to teachers' organizational commitment. This is in harmony with theoretical perspectives.

Reyes and Shin (1995), for example, have stated that job satisfaction must be present for organizational commitment to develop. In the light of the above findings, one may conclude that a leadership style high in consideration is associated with teachers' organizational commitment.

This, perhaps, is due to the fact that considerate or supportive behaviour of the principal is most often characterized by mutual trust, two-way communication, and concern for teachers' personal welfare. It is not surprising, then, that teachers respond to principal support by being committed to the school organization.

This may, in fact, be particularly the case in the Philippines. As pointed out by Alegre (1994) and Andres and Ilada-Andres (1987), the Filipinos tend to be relationship-oriented and work better under a considerate leadership. The implication of this finding is that principals everywhere, but especially in the Philippines, need to practice considerate leadership behaviour in order to encourage teacher commitment.

RELATIONSHIPS OF SCHOOL CLIMATE AND ORGANIZATIONAL COMMITMENT

Teacher commitment was found to be positively related to the degree of climate openness, sharing 20% of the variance. This finding agrees with McDaniel's (1992) study that explored the relationship of elementary teachers' organizational commitment and school climate openness and found a positive relationship between these two factors.

Hatton (1996), likewise, in her study of high-performing, low socioeconomic border elementary schools in Texas, found that a positive social and collaborative climate was related to organizational commitment of teachers.

The Supportive Principal Behaviour, the Engaged Teacher Behaviour, and the Intimate Teacher Behaviour subscales correlated positively with organizational commitment of teachers, explaining 13%, 14%, and 6% of the variance respectively.

The Frustrated Teacher Behaviour Subscale correlated negatively with the organizational commitment of teachers, explaining 4% of the variance. The contribution of the positive factors to teacher commitment and the detrimental role of the negative factor of teacher frustration is supported by the literature (Cheng, 1989; Kottkamp et al., 1987; Pitman, 1993; Tartar et al., 1989).

In the present study, teachers who worked in a climate of openness characterized by principal support, engaged and intimate teacher behaviours, and the absence of frustrated teacher behaviour, reported a positive commitment to their school.

This may be explained by the fact that individuals enjoy working under conditions that allow them freedom to use their discretion and to be participative. Kottkamp et al. (1987) described the principal and teacher behaviour in an open climate:

The principal leads through example and the teachers respond with enthusiasm. Teachers work well with each other and with the principal. Given the dynamic leadership of the principal, and a committed faculty, there is no need for burdensome busywork, close supervision, impersonality, or a plethora of rules and regulations.

The findings of this study suggest that if the right climate conditions can be created in the SDA secondary schools in the Philippines, teachers will enjoy their work and experience a high degree of organizational commitment.

RELATIONSHIPS OF LEADERSHIP STYLE AND SCHOOL CLIMATE

This study found a significant negative correlation between the Climate Openness Index and the Quadrant I and IV styles of leadership. These two quadrants reflect low consideration behaviours. By the same token, the Climate Openness Index related positively (r =.44) to Consideration Subscale, but negatively (r =.03) to Initiating Structure Subscale.

Prior studies have similarly found significant relationships between leadership style and school climate. Holley (1995), for example, concluded from her study of high school administrators and staff members of an urban school district that the leadership style of the administrators can create a climate that is conducive and supportive of the instructional emphases in the school. Withrow (1993), in his study of 801 secondary school teachers in Halifax, found a significant correlation between the scores on the *Leader Behaviour Description Questionnaire* and the scores on the *School Climate Survey*.

Likewise, Higgins (1993) found that participative leadership style was perceived by his sample of 120 teachers of Catholic secondary schools in Texas as promoting a positive school climate.

At least two prior studies have supported the relationship of a high-consideration high-structure leadership and an open climate. Al-Gasim's (1991) study of middle school climate involving 39 schools and 354 teachers in Saudi Arabia reported that a leadership high in both dimensions was related to an open school climate. Bailey (1988) found that high school teachers in West Virginia perceived a positive relationship between their principals' leadership styles and the school climate. The findings indicated that high school principals who desire to improve their school climate need to exhibit high task and high relationship behaviours with their teachers.

Further insights may be derived from the relationships between the leadership behaviour and climate subscales. The consideration leadership behaviour was found to correlate positively with all climate subscales except the Frustrated Teacher Behaviour Subscale.

This relationship was particularly powerful in the case of supportive principal behaviour and engaged teacher behaviour, and shared 69% and 29% of the variance respectively. The initiating structure leadership behaviour was found to correlate positively with directive principal behaviour and frustrated teacher behaviour.

In the case of directive principal behaviour, the relationship explained 28% of the variance. Both directive principal behaviour and frustrated teacher behaviour enter the calculation of the Climate Openness Index as negative factors.

The relationships between leader behaviour and teacher behaviours may be summarized thus: In schools, where the principal's leadership style is high both in consideration and structure, the teachers experience engagement in school plans and programmes and perceive their principals as manifesting directive behaviours.

As the consideration leadership behaviour is reduced and the initiating structure behaviour is maintained, teacher frustration increases and there is a reduction in perceptions of supportive behaviours on the part of their principals. As initiating structure behaviour is reduced and consideration behaviour is maintained, teachers see their principals as less directive in their behaviour and feel less frustrated.

When both consideration and initiating structure behaviours are reduced, teachers perceive their principals as unsupportive and disengage themselves from school plans and programmes. In essence, principals who initiate structure are seen as directive and tend to frustrate many teachers. Leaders who manifest consideration, on the other hand, are seen as supportive, and teachers become actively engaged in school life—constructs closely allied to organizational commitment. This meshes well with the finding in this study that considerate leadership behaviours of the principals were strong indicators of the organizational commitment of teachers. Thus, considerate leadership behaviour would appear to be an important factor in ensuring teacher engagement and absence of frustration.

4

The Teacher as a Teaching Aid

Although we now live in a high tech world and have access to a variety of teaching aids, there is one aid that is convenient, portable, uses no electricity, can be used effectively in light or dark and is available all the time. In my experience as a teacher I have discovered that I can involve students more in classroom discussion and activities if I follow certain simple steps.

Movement

Sitting behind a desk or standing on a dais creates a "distance" between the teacher and the students. Try to have an aisle and enough space between the rows so that you can easily reach those at the back. This way you can talk to individual students, allow the shy ones to ask questions quietly without the fear of embarrassment, as well as check their work and help them.

Some movement on your side is essential, because it allows the students to focus on you.

- Stepping forward to emphasise a point, small steps towards different sides of the class lets the student feel that the teacher is taking genuine interest in what he or she is saying.

Use Body Language

Your body should be in your control. Hold it in such a way that you look alert and awake. Avoid slumping and sagging. Just as too little movement is boring, too much movement can be a distraction.

- When your posture is erect it puts you in control of the situation and the students realise this. It also encourages the students, subconsciously, to become alert as well. You may notice the lazy ones sitting up and paying more attention to what is happening around them.

Eye contact

Make an effort to keep eyes lively, aware and interested. Move them around to take in everything. Fix them on specific students, but not for so long that they become uncomfortable! Avoid focusing on the worst or best students.

- Knowing that the teacher demands eye contact keeps the students alert. It also gives the teacher a feedback on the impact of what he or she is saying. This is particularly important in large classes, where "distance" between the teacher and learner is greater, and individual attention is more difficult.
- An effective teacher can control class behaviour to a great extent by the expression of his or her eyes.
- Make sure that you make eye contact with each student, so that it seems you are talking to him or her individually.

Gestures

Arms and hands are a very expressive visual aid. They can be used to describe shapes, actions, movements, *etc.*, but, remember to keep still while listening to a student. Otherwise the message sent to the student is that he is being longwinded or boring.

- Habits such as fiddling with notes and books, playing with pens, key chains, or doodling with chalk on the black board can be both distracting and irritating for the student.

Facial expressions

There's nothing worse than a constant frown, which discourages students from asking questions, feeling free to discuss a problem or coming for help.

A smile can work wonders.

- It encourages the student to participate more actively and dispels the notion that the teacher is over critical.
- Look interested while a student is speaking.
- A smile, a grimace, a curl of the lips, raised eyebrows, *etc.*, at appropriate moments will send messages as needed.
- Send positive vibes and cultivate a sympathetic and encouraging expression!

Speech

Have you ever heard yourself speak? Do you know what your voice sounds like to others? A low monotone or a high-pitched voice can be difficult to understand or grating to the ears. Does the sound of your voice send students to sleep or running for earplugs?

- Be critical of yourself. Try taping your voice - listen to yourself. Where are you slipping up?
- *Make your own personal checklist:*
  - — Are you speaking at the right volume?
  - — Does the end of your sentence fall so low that students sitting at the back cannot hear?

— Are you hemming and hawing too much?
— Are you speaking too fast?

Student talk

Break the monotony and give students plenty of time to talk! It will keep them alert. Make small jokes, be friendly.

Names

Call students by their name. It sounds warmer and friendlier and lessens the distance between the teacher and learner. The teacher is the best teaching aid. Be sure that you are using yourself to the full effect.

HOW ENGLISH LANGUAGE TEACHERS CAN USE PICTURES IN CLASS

Teacher and blogger Larissa Albano, who won our latest monthly Teaching English blog award, explains how using pictures as a teaching aid can help language teachers engage their students.

If I say 'picture', what do you think about? I guess the words 'drawing', 'photo', 'painting', and 'film' might come to mind.

As for me, well, I think a picture is much more than an image, especially when I teach English. Pictures are essential when it comes to engaging students who are learning a new language at any level.

They can be successful study aids during lessons, and they can act as useful prompts to help students when they are practising speaking.

So how can you use pictures in the classroom? Here are seven tips for bringing visual aids into your lessons, each starting with one of the letters in 'picture' to help you remember them.

Predict: Students can look at pictures or watch the first part of a video in order to predict what the topic of the lesson or the activity will be about.

Interact: The game Pictionary, in which players have to guess specific words based on their team mates' drawings, and other mingling games with pictures are fun activities that can be used with both children and adults to review the vocabulary they have learnt. In order to engage students, teachers can show a video or a picture only to half their class, and ask them to describe to the other half what they can see. This second group will then have to try to report what the other students have seen, as accurately as they can. Everyone will see something slightly different from the others, and the activity will strengthen their rapport.

Create: Students can write or tell a story by using a sequence of pictures, or, if the teacher wants to really fire their imagination, the students can create a story based on just a single picture. This exercise can be particularly interesting and productive if the teacher encourages students to use specific tenses (such as past simple vs past continuous), vocabulary or functional language in their story - for example, describing a conversation at the train station.

Talk: At the beginner level, some students' faces go blank when they are asked to answer a question. Teachers can avoid prolonged silence and prevent their students from feeling embarrassed by providing them with a picture. They can break the ice by asking the students to describe what they can see in the picture.

Understand: What's the easiest way to explain the meaning of a word? Show it! Classrooms may be fully equipped, but they can't hold everything. If there's an item or object that you want to show your students to help them remember the word for it, try showing them a picture. Flashcards are an invaluable resource for teaching or revising vocabulary. They can be easily downloaded or created online.

Reflect: Not only does a picture give you the chance to reflect on what you can see, but it also represents the opportunity to develop your other senses by considering what you can hear, smell and touch. This is a useful exercise for teachers who are preparing their students for a speaking exam.

Most of the time, speaking exams are in pairs and students worry that they may run out of words because their partner will have already said everything about the picture they have been shown. By using their other senses, your students can add new information and will be able to avoid repetition.

Enact: In any class, there is usually someone who is shy or quiet. So how can you draw them out of themselves and encourage them to practise speaking? If you ask your students – it doesn't matter how old they are - to draw a mask, put it on and pretend to be someone else, they may feel less self-conscious. Putting themselves into somebody else's shoes can give students the chance to express themselves in a more forthright way.

TEACHING AIDS

Like teachers of other subjects, the computer Sciences teacher also desires to teach his subject as effectively as possible for realizing the stipulated objectives of teaching computer Science. In doing so he wants an effective communication with his students in the most interesting and useful way. The effective of this communication demands that he should convey what the teacher wants to convey in the more desirable and effective way and on the other end the children receiving the fruit of this communication must be benefited by it to the maximum extent. For meeting with such requirements of an effective communication the teacher many times restore to certain aids which are generally known as teaching aids or audio-visual aids in the fields of teaching-learning process.

CLASSIFICATION OF TEACHING AIDS

Teaching aids may be classified as audio aids, visual aids, audio-visual and activity aids.

(a) Audio aids like radio, tape recorder, *etc.*, represent that aid material, which helps the learner to acquire the knowledge through his auditory senses.

(b) Visual aids like charts, pictures, models, epidiascope, micro-projector; film-strips, *etc.*, represent that aid material which helps the learner in acquiring the learning experiences through his visual senses.
(c) Audio visual aids like television, motion pictures objectives, *etc.*, represent all those equipments and aid material in which the learner gets opportunity to utilize both his auditory and visual senses for gaining the desired learning experiences.
(d) Activity aids are those in which the students learn by engaging in some useful activities. These aids facilities through sight and sound as well as through doing. The example of such aids in the Computer Science Education & Teachings are following:
    1. Computer Science excursions and visits.
    2. Computer Science exhibitions and fairs.
    3. Computer Science Museum.
    4. Nature study corner.
    5. Experimentation in the laboratory and workshop.

There is another way of classifying the teaching aids and equipments, which is quite technical and technological. According to this approach, These can be classified as hardware and software.

The equipments and machines like epidiascope, different types of projectors, radio, television, tape recorder, video, teaching machines and computers, *etc.*, are named as hardware. On the other hand in the category of software we include the material like pictures and other printed material, graphics like charts diagrams, three dimensional objects like models, specimens and audio and visual tapes. The material included in this category makes an essential part of the equipments and machines mentioned as hardware. The hardware can serve as a teaching aid only when it is fed or supplied with some or other types of software. Therefore hard wares are quite dependent upon software for their services. The graphics, three dimensional objects, pictures and printed material, *etc.* can function quite independently as an useful aid for the Computer Science Education & Teaching.

PREPARATION OF TEACHING AIDS

The different types of teaching aid material mentioned above can be procured from the variety of sources. It can be borrowed from the audio-visual libraries, institutes or departments. Being priced commodity, it can be purchased from the commercial establishments. However, educa-tionally as well as economically it is always better to get them prepared in the schools itself. Consequently, the teacher has to share the big responsibility of guiding his students in the preparation of such material. For this purpose, he must try to acquire the necessary knowledge and skills for its proper preparation. Consequently let us try to discuss some essentials regarding the preparation of the important types of teaching aid material generally used in the Computer Science Education & Teaching.

PREPARATION OF MODELS

Models, on account of being three-dimensional, are capable of representing the real objects in a better way than the two-dimensional graphic aids employed for this purpose. These can be effectively utilized for the clarification of the concepts and ideas related to the description of an object, event or process belonging to the subject Computer Science. We can very well procure them by purchasing from the concerned business establish-ments.

However, it is always better to get them prepared in the institution itself with the active cooperation of the students. Therefore, a teacher should try to make him acquainted with the essentials of their preparation. Let us now concentrate over this aspect.

HOW TO CONSTRUCT MODELS?

A. *While initiating the task of preparing instruction models one should try to keep in his mind the following points:*
   1. How far the use of a model as a visual aid will be suitable for the presentation and classi-fication of the subject matter? What type of model should be constructed? What should be the specific educational use and purpose of the constructed model? All such questions need to be answered before venturing into the task model preparation.
   2. After then, the decision regarding the material used for the preparation of model should be carefully taken. One can use a variety of material like clay, plaster of Paris, paper mach, ordinary paper, cardboard, ordinary wood, plywood and metals, *etc.*, for the construction of the models. Therefore, one should properly opt for a particular material in the construction of the model in hand with a clear perception of the resources and circumstances available in the school.
   3. Since models are regarded as the true representative of the reality about the objects and processes, therefore one should have the reality before him for copying down it through a model. In the absence of the real object or phenomenon one may have its picture or photographs before him. Sometimes one can take the help of this memory in the shape of mental image of the real object or process for preparing a rough sketch of the required model with some indications about the sizes. This rough sketch should be properly taken into account for making the model of appropriate size and dimensions.
   4. While preparing a model it should also be kept in mind that the constructed model should be effectively utilized for the desired teaching and learning with great ease and convenience. It should also not to be got spoiled or damaged easily and can be preserved safe for the needed future use.

PREPARATION OF MODELS WITH DIFFERENT TYPES OF MATERIAL

Construction of clay models: Clay can be properly utilized for the construction of almost all kinds of models. For this purpose, ordinarily, we make use of the clay, without sand, usually found in the beds of the river, ponds or lakes. The dry clay of this type is beaten for converting it into clay powder with the help of an appropriate hammer. It is then placed in a pot and required amount of water is added to it. In two or three hours when it gets softened it is squeezed in the manner we treat wet flour for making chapatti. Now it acquires proper softness for making desired model. Such prepared clay, then, is to be kept moist in zinc lined box or in an earthenware pan with a lid and taken out at the proper time in the desired amount of making the model.

The roughly sketched figure is to be kept in mind while using the prepared clay for making the model. In case of making large sized models, these should first be made of hay, wire, bamboo-sticks or some such light things and clay coating be put over them afterwards. For getting good results, the use of properly baked clay moulds also prove quite satisfactory in model making.

After getting them figured or structured with clay (through free hand structuring or moulds) models need some essential work in terms of inscriptions, designing, lettering, decoration, *etc.* This work should be done before getting the models baked with the help of some neighbouring potter. The backed models can then be subjected to proper colouring for giving them real object like appearance.

PAPER MACH MODELS

Paper mach is obtained from any fiber paper *i.e.*, newspaper or brown paper, *etc.*, by cutting it into small pieces, soaking them in water for several hours (it can be heated also for quick results), pouring of superfluous water and powdering them to the required consistency. A little glue and starch may also be added to the pulp for making the mach more adhesive and unbreakable. The prepared mach, then can be utilized for making the desired models. For this purpose it is pressed into a plaster or clay mould.

For the better results, this mould (meant for preparing a particular model) should be oiled with any suitable oil or grease such as olive oil or Vaseline before it is filled with the paper mach. After getting the mould filled with paper mach it is left for drying thoroughly. After drying, the paper mach structure can be easily removed from the mould for adding necessary colours and designs.

Instead of taking the help of some moulds, one can first build a necessary structure with the help of wire, bamboo-sticks, *etc.*, and then paper mach coating may be put over it.

Besides clay and paper mach, plaster of Paris can also be utilized for model making. Here also we can utilize the plaster of Paris material on wire or bamboo structure or proceed for free hand structuring or building of the model with the help of moulds or previously build structure.

CONSTRUCTION OF THICK PAPER AND CARD BOARD MODELS

Thick paper, chart papers and cardboard material can be effectively used for the construction of useful models related with the teaching and learning of various topics in the subject Computer Science.

CONSTRUCTION OF THERMO COLE MODELS

Very useful static as well as working models can be easily prepared with the help of Thermo Cole sheets. Thermo Cole is a very lightweight, soft, white and thick substance available usually in half sq. meters sheets. These sheets can be easily cut with the help of bled cutter, handsaw or special thermo cutters (electrically heated nicrome wire). We can use synthetic pastes for joining the pieces of Thermopolis and then the models of desired shapes, sizes and form can be easily prepared with the help of thermo Cole's piece. These so constructed models can then be subjected to final touch or finishing with the help of sand paper and then colouring or painting may be done by using bright water colours for providing them necessary aesthetic values.

PREPARATION OF SLIDES

In view of their preparation, the slides maybe categorised as simple slides, photographic slides and computer generated slides. Let us discuss their preparation under separate heads.

PREPARATION OF SIMPLE SLIDES

The various functions related with their preparation can be summarise as below.

1. First of all a suitable choice is made with regard to the base of the slide. This selection can be made out of the available so many bases like plane glass, etched glass of etched plastic, cellophane, silhouette, clear transparent cellulose acetate film, translucent paper of gelatin-coated glass, *etc.*
2. The help of tracing paper is taken for the necessary sketching, drawing or writing work on the base of the slide. For this purpose we first mark on the tracing paper the boundary of the area of projection. The central area measuring 2" × 2" or 3¼" × 4" is thus marked for the sketching a drawing work, leaving around a border of ½" dimension. The desires figure, diagram, sketch, *etc.*, along with proper lettering is then drawn in the central area (leaving the border) with the help of proper drawing material.
3. The figure and drawing work (carried over the tracing paper) on this transparent sheet with the help of coloured slide pencils or coloured inks.
4. When the necessary tracing, artistic or writing work is over, the transparent sheet is placed over a similar sized piece of chart paper or cardboard and then stitched to it, with the help of a tape.

PREPARATION OF CHARTS

Various types of charts are frequently used in teaching concepts, principles, processes and applications, *etc.* in Computer Science. Therefore a teacher of Computer Science must try to learn the basics for the preparation of these carts. For this purpose one can begin with the task of learning simple sketching and line drawing for the necessary visual display in the charts.

As a result with some practice one can acquire necessary confidence in the drawing and preparing of different types of charts like time charts, table charts, flow charts, tree charts, *etc.*, for the better.

The following points may be kept in mind in their preparation:

(i) In view of the teaching-learning requirement, it should be properly considered that what is that which is to displayed and conveyed through the chart in preparation.

(ii) How can the required ideas and information be represented through the lines, sketches, figures and symbols of the charts should be properly analysed. For this purpose it is better to draw some rough sketches, designs and patterns and then selected the most appropriate one for the actual drawing.

(iii) The selected rough pattern, design or plan should then be carefully transferred into the chart under preparation with the help of neat and clear of the lines, figures and sketching, *etc.*

(iv) In the last, due care should be taken in colouring and lettering of the charts as to give it an appealing outlook and making it self-explanatory for the clarification of some teaching points.

PREPARATION OF PICTURES AND DIAGRAMS

After getting practice in the drawing of simple sketches and figures on charts, the teacher should learn and practice the drawing and preparation of some difficult graphics like pictures and diagrams.

In the beginning, it becomes quite difficult to draw them in the way these are being drawn in the textbooks or other printed media. The beginning, therefore, should be made with the task of their copying by resorting to the techniques outlined below:

TRACING

In this technique a tracing paper is placed over the printed figure or picture. Since every thing is visible through the tracing paper therefore it becomes quite easy to trace or copy the visible figure or picture on the paper with the help of a properly sharpened pencil. After getting the copied sketch, the attempts should be made to equip it with suitable colour and proper shades.

In both these appliances the top consists of plane glass and there lies beneath a source of strong light. *i.e.*, high-powered lamp for illuminating the picture or copying material placed over the glass top. As a result when a piece of paper on

the illuminated picture or figure the tracing task becomes quite easy and one can easily sketch the desired figure and picture. Later on, he can add colours and provide shading for making it more attractive, visible and worthwhile experience.

STENCIL AND BLOCK-PRINTING

There are many figures, pictures and diagrams, *etc.*, that need to be frequently used by the teachers and students in the teaching and learning of various topics related to the subject Computer Sciences.

Such figures can be easily drawn with the help of some plastic or metallic blocks. The students can themselves prepare these blocks. In some cases these blocks can be inscribed on the flat pieces of potato or carrot. With the help of these proper stencils and blocks, the chalk-boards, bulletin boards, flannel boards and chart paper, *etc.*

USE OF APPROPRIATE PROJECTIVE INSTRUMENT

The projective equipment like episcope, and opaque projector may prove quite helpful in tracing or copying down the picture or figures available in books, magazines or other printed media.

The tracing work can be done in the following way:

(i) An appropriate sheet of paper or chart paper is placed (stitched properly through pins) on the projective screen (wooden board, classroom blackboard or cloth piece, *etc.*) for tracing or copying down the original figure or picture.

(ii) The page of the book or the original graphic material in the form of picture, diagram, maps, *etc.* is placed on the projection platform of the projector instrument in such a way as to get its properly enlarged image on the piece of the paper already placed over the projective screen.

(iii) Since the projection is very clear and enlarged it becomes quite easy to sketch the projected figure or picture on the given sheet of the paper with the help of a sketch pen or pencil.

(iv) After getting the figure sketched, the appropriate shading and colouring can be done afterwards as to more make the traced figure appear as real as possible.

PREPARATION OF PICTURES

Having some practice of drawing lines, sketches and figures, *etc.*, through the tasks mentioned above, one can take step for the acquisition of more appropriate drawing skills and techniques required for the drawing and preparation of visual pictures. The third dimension in terms of distance, width and height of an object for the appearance of the picture just similar to the original object, should be now introduced in the drawing of the figures. One should know how to show the presence of rivers, mountains, elevation and depression, distances and height, deserts and water reservoirs on the surface of

the earth. The various laws of perception and direction. The teacher should try to acquire necessary knowledge making use of these laws in drawing the various pictures required for the teaching Computer Sciences.

PREPARATION OF DIAGRAMS

The teacher should now try to learn the necessary art and skill for the drawing of various types of Diagrams depicting the useful data, facts, principles, processes and application of the Computer Science. In the case of teaching demonstrating the preparation of a gas in laboratory, he may try to take the help of the diagram sketched on the black board, chart or he may show it through a transparency. Similarly, he may try various types of diagrams for the effective teaching of the topics like water cycle, atomic structure and demonstration activities related to the various principles and process of the varying concept in Computer Science.

There has been a significant revolution and change in terms of the preparation and use of graphic material. Now a teacher has no compulsion to struggle for the sketching.

Drawing, colouring or painting of the needed graphic material the traditional manner as a designer, artist or painter. Much of his work can be done easily through the help of some or the other projective equipments like episode, epidiascope or overhead projector. He can directly (at his will) make use of graphic material present in the textbooks or otherwise available in hand drawn, sketched or printed forms for their proper displays on the screen with the help of projective equipments.

The recently developed technological means like video-graphics equipments; personal computers, image composers and scanners have brought most sophistication in the preparation and use of graphics.

They can help the teacher and the learner to create necessary graphics with utmost efficiency, accuracy and effectiveness for meeting the requirements of any teaching-learning situation. The so created graphics can be easily demonstrated and displayed through the monitors, television screen or projection screen.

We can create transparencies, prepared slides and video presentation with the help of relevant components attached with our personal computers in no time with minimum effort and expenditure for giving maximum educational advantage in any teaching-learning situation.

SELECTION OF TEACHING AIDS

Teaching aids are the means as well as the helping hands of a teacher for the realization of the stipulated teaching-learning a instructional objectives of his lesson.

A teacher must now to make use of an appropriate teaching aid most suitable for the teaching at a particular teaching-learning situation. As a matter or guidance, a teacher of Computer Science must take care of the following principles while making a judicious selection of the proper teaching aid for teaching a particular topic in his subject:

1. *Relevance:* The aid used should be quite relevant to the topic in hand.
2. *Suitability:* It should suit the topic as best as possible by making its study quite comprehensive, interesting, permanent and effective.
3. *Educative:* The aid should have specific educational value besides being interesting and motivating. In no case it should be confined to mere entertainment.
4. *Best substitute for the first hand experience:* The aid should be so chosen as to prove a best possible substitute in terms of reality, accuracy and truthful representation of object or the first hand experiences.
5. *Learner centered:* The aid material selected should be such that it suits the age level, grade level, basic instincts, urges, interest and other unique characteristics of the students of the class.
6. *Simplicity:* The aid used should be quite simple in its construction and use. It must also be able to convey its sense as simple as possible.
7. *Environment centered:* The aid material should suit the requirement of the Computer Science, social and cultural environment of the student.
8. *Practicability:* The aid material should be selected in views of the prevailing circumstances, available resources and purposes to be served. It should not be too costly in its purchase and collection or in terms its use and demonstration in the class. It should meet the available circumstances in terms of weather conditions. Climatic requirements, handling by the teacher and student and other resources readily available in the institution and classroom.
9. *Objectives Attainment:* The aid material should be so selected as to help in the proper realization of the stipulated learning or instruction objectives of the topic in hand.

THE EFFECTIVE USE OF TEACHING

The task of the teacher is not just finished by making the selection of the teaching aids for his topic. The selection, however judiciously it may be name, can prove fruitful only when due attention is paid over this wise use. The principle kept in mind for this purpose can be summarized as below:

PRINCIPLE OF PREPARATION

According to this principle the use of aid material should have a well chalked programme concerning preparation on the part of teacher as well as students. In other words these should be a proper planning as well as advance preparation for the utilization of the aid material. In brief the principle demands on the following points from the teachers and students.

ON THE PART OF TEACHER

1. The full knowledge about the nature of the aid material, and the definite purposes to be served by its use.
2. The linkage of the aid material with the contents or learning experiences.

3. Necessary skill and training for the handling of the aid material and equipments.
4. Where and in which sequence, the aid material is to be utilized.
5. Proper planning and visualizing the use of aid material before its actual use.
6. Adequate rehearsal for the utilisation of the material.

ON THE PART OF STUDENT

1. Acquisition of the basic background in terms of previous learning, attitudes and interests for receiving what is being presented to them through aid material.
2. Clarity about the objectives of their participation in the teaching-learning activities involving the use of aid material.
3. Clarity about certain things like what they have to observe to do, how it is being done, what specific roles they have to play and how can they be most benefited by the use of the aid material, *etc.*
4. Essential skills and teaching for helping the teacher in preparation and utilizing the aid material.

THE PRINCIPLE OF PROPER PRESENTATION

According to this principle for the effective demands attention to the following points on the part of the teacher.

1. Observance of the precaution for the safe and proper use of the aid material and equipment.
2. To keep in control the Computer Science facilities and condition for the use of aid material and equipments.
3. Using aid material at the proper time in a proper sequence by integrating with if the subject matter or learning experiences.
4. Displaying or utilizing the aid in a proper way for enabling all the student of class to derive maximum advantages out of it.
5. Helping the students to observe, record and participate in the use of aid material as adequately as possible.

PREPARATION OF PHOTOGRAPHS

Photographs occupy a prominent place among the visual aids. These can be used to provide valuable learning experiences in all the subjects of the school curriculum. The variety of photographs related to the teaching and learning of various topics in the subject Computer Science, can be easily purchased from the market. However, it is always better to get them prepared with the help of students. The work involving photography can be carried out at the time of excursion or observation of a process, event and object at some other time with the help of camera and photographic material. It does not only yield in the production of paper prints in the form of photographs but also in the preparation of photographic slides and film strips. Let us discuss below the

simple process of photography. The main equipment employed for the purpose of photography is the photographic camera. These cameras differ in shape, size and operation. However, the basic principles and process employed in the working of the entire camera can be summarized as below:

The photographic camera is focused over the object or its part, the photograph of which we intend to get. The rays of the light emitted by the object are allowed to enter through the aperture of the camera. These are made to form an image of the object by passing through the lens fitted in the camera over a sensitive photographic plate or film lying at the backside of the camera. The photographic plate or film is usually coated with certain appropriate salts of sliver like sliver nitrates or silver chlorides.

As a result what we get on the sensitive photographic plate is the image of the object formed the lens in the form of invisible silver grains. To make this image visible we have to carry on a special process by passing through the following steps. (i) Developing, (ii) Fixation, (iii) Washing, (iv) Drying, and (v) Printing.

DEVELOPING

The usual 35 mm cameras give 36 explores for taking 36 photographs on the provided film. After subjected to 36 times exposure the film is taken out of the camera without making it exposed to any light. The work is preferably carried out in a closed dark room. This film in a dark room is now passed through a specially prepared chemical solution called developer placed in a tray. A fine quality of the developer may be prepared with the help of the following formula.

Method	7.5 gms
Sodium sulphate (anhydrous)	100 gms
Sodium bisulphate	15 gms
Water	1000 gms

Chemical action of the developer brings about reduction to silver of those salts, which have been exposed to light. It helps in developing (making invisible image visible) the image. As a result invisible or latent image is changed to a sliver image which is negative *e.g.*, white clothes appear black and black appears white.

FIXATION

A few silver salt may still remain unreduced to silver even after treated with the developer. Therefore, the film is now passed through formula may be used for the preparation of fixer solution.

Hypo	300 gms
Potassium metabi-sulphate	25 gms
Chrome alum	12.5 gms
Water	1000 gms

WASHING

The film is now being hanged up with the help of clips in some dust free, airy and shaded place. It is done for removing the trace of water and making the film hardened.

PRINTING

The printing work is again carried out in a dark room. For this purpose we need a special printing frame or box. There lies a source of strong light *i.e.*, high powered electric lamp beneath the frame for exposing the negative placed on the glass surface of the frame in such a way as to produce positive image on the specially used photographic paper placed above the negative.

One has to take special precaution about the timings to which the negative should be exposed to light. It is learned through experience. However, for an average negative placed at a distance of 15 cms from a 60 watts lamp, the exposition period of half second is quite sufficient. The so printed positive is then subjected to the processes of developing, fixing, washing and drying for the production of a final positive print.

These photographs can now be subjected to classroom display according to the needs of the teaching-learning situations by mounting them on the proper surfaces. For explaining a whole process or providing full details of the object, various photographs related with that process or object are taken in the integrated sequence. These photographs are then subjected to various photographic processes for getting final prints and then shown in the form of closely related photographic picture in the class of deriving useful purposes.

In case we need the larger photographs, we can get the usual 35 mm. Cameras photographs enlarged with the help of enlarger. The help of the instruments like episcope and opaque projector can also be taken for displaying the usual photographs on a screen in the enlarged form.

The photographic art is now being quite developed. We can have now coloured photographs in place of the traditional black and white. The things and events now can be photographed in their natural colour for providing real vivid experiences. There are now available such improved cameras, which can produce, finally printed photographs within a few seconds. All the essential photographic processes, developing, fixing, wishing, driving and printing are carried out in the camera itself quite automatically and instantly. In this way, photography has emerged in the shape of a great boon to us for providing valuable visual aid material to the teaching and learning of various subjects.

PREPARATION OF PHOTOGRAPHIC SLIDES

Photographic slides are prepared with the help of a camera and photographic material and these may be produced both in black and white and colour.

Photographic slides are easy to make. The process begins with the taking of photographs of the objects, persons, events and processes with the help of an appropriate photographic camera. After exposition, the film inside the camera

is taken out of it in darkroom and subjected to various processes named as developing, fixing, washing and drying to get the negative of a photographed image.

The negative is further exposed to a 2 × 2 or ¼ × 4 lantern slide plate. That plate is further subjected to the processes of developing, fixing, and washing drying for getting the positively developed final plate. It is then properly masked (mounted over a thick chart paper or card board), covered with a cover glass and bound with slide binding tape for getting a photographic slide to be used for projection.

PREPARATION OF COMPUTER MADE SLIDES

Very useful slides can be prepared with the help of computers by teacher and students for meeting out the requirement of any teaching-learning situation. For the drawing, sketching and graphic work various types of software is now easily available. With a little practice, one can be able to produce the desired sketches, diagrams, graphs, maps, pictures and any sort of graphical presentation along with the text material on the hard disc of the computer machine. From here it can be easily print out for using with overhead projector. The printed version (coloured or black & white) can then be subjected to photographic process with the help of a camera and then we can have photographic slides. It is also possible to print a slide internally by employing a special camera setup with our personal computer (PC) system.

Computer production of graphics carries a number of valuable advantages. One can have any type of graphical presentation. Have the facilities of its frequent composition and recomposition; change the colour, contrast, *etc.*, to his will and add text of any type, size colour of background of his choice. It is also very easy to prepare these graphics and slides with minimum efforts, time and expense with utmost accuracy and effectiveness. Therefore, the work of preparing slides or display material is now going to be handed over completed to computer and subsequently students and teachers must try to acquire necessary knowledge and skills for the use of computers in graphics as well as slides preparation with the help of relevant software.

PREPARATION OF FILM-STRIPS

A film-strip is usually defined as a collection of closely related and well sequences transparent still pictures or images lying on a strip of suitable 16 mm or 35 mm length film. It differs from the photographic slides mainly in terms of two things. Firstly, here the pictures and images of the objects and events are not held on the transparent slides. These lie over the strips of the film. Secondly when in a particular slide we have only a single picture or image in the film-strip there lies a number of pictures or image ranging from 10 to 100 for representing and clarifying a particular concept or process.

The pictures or images on the film strip maybe silent or sound, in colour or black and white. Each picture or image in the film strip is called a ‘frame’ and

there may be 10 to 100 such frames on a film strip depending upon its length. These may be single or double frames. The frames having ¾ × 1 (18 × 24 mm) size are called angle frames while those having 1½ × 1 (36 × 24 mm) sizes are referred to as double frames. A frame whether single or double contains useful material in the form of picture, illustration, graph, diagram, numerals, symbols or writing which can be made visible in the enlarged form on some projective screen with the help of a suitable projector.

Now the question arises, how to proceed with the task of preparing a film-strip of the instructional purposes. In brief, it is useful to take into account the following points for deriving proper results in this direction.

1. The particular topic, theme or the process that is going to be illustrating through the film-strip should be divided into well-sequenced small units.
2. For dealing with these sequenced smaller units, what type of visual material (pictures, charts, maps, cartoons, posters, diagrams, handwritten, typed or printed text, specimens, or models, *etc.*) will prove suitable should be decided properly. This consideration should be made in view of the maximum educational advantage drawn and the convenience as well as the availability of the resources. The teacher should make a proper list of all such illustration material.
3. Teacher should now get him engaged in the preparation and collection of the items belonging to the decided list of illustrative visual material. He can take the help of his students for the desired collection and preparation of these items. The help of professional artists, expert and experienced teachers can also be taken in the preparation and collection of the essential visual material that is to be photographed on the frames of the Film-strips.
4. In case the illustrative material is in the form of graphics (Pictures, diagrams, *etc.*) or text (handwritten, typed or printed material) it should be drawn or held on the cards of convenient standard size, which for 1½" × 1" (36 × 24 mm) double frames could be 12" × 8" (30 × 20 cm). For the three-dimensional objects-specimen or models and living scenes we may decide in term of enlarging or reducing the original photographs.
5. All the cards containing the visual illustrate material are then sequence in view of the systematic development of the subject material from 1 to the end of the series, with 1 on top.
6. The material contained on these properly arranged sequenced card is photographed with the help of suitable camera, one after another in order. These are further subjected to developing; fixing strip can then be further utilized for printing positive copy ready for above mentioned, silent Film-strips it is also suitable projector.
7. Beside the above mentioned, silent Film-strips it is also possible to prepare sound Film-strips, the Film-strips, which are accompanied by audio-records. These can help the students to utilized their auditory as well as visual senses for the gaining of effective learning experience.

8. One more important consideration regarding the preparation of Film-strips related with its length. The lengthier strip containing large number of frames may prove uninteresting and cause fatigue. The material contained in it one account of its largeness may also become beyond comprehension to the average students. It is therefore needed that subject matter related to topic should be divided into properly sequenced smaller units. These units must be properly correlated and integrated and a particular unit should exhibit unity and totality of a theme, idea, concept or process. For example in preparing in film-strip on the topic "flower and its parts" one can go ahead by dividing it into the following different units or parts:
   (i) Introduction Zone: In this unit of the film-strip what is to be displayed through the film-strip may be briefly summarized to the viewers. For this purpose it may contain a brief introduction, objective or purpose of studying the topic and summary of the study material related to the topic.
   (ii) Display of the various parts of the flower as a whole in the form of complete flowering plant.
   (iii) The structure and functioning of the different parts of the flower (we can have different sub-unit for this purpose).
   (iv) The co-existence and co-functioning of the various parts of the flower.
   (v) The work related with the recapitulation and revision of the presented material.
   (vi) The material and suggestions regarding further study and application.

PREPARATION OF AUDIO TAPE AND VIDEO TAPE

The talks, lectures, discussions, proceedings of the seminars and workshops, the voices and sounds of the real objects, people and natural phenomenon well as the previously delivered radio broadcasting can be properly recorded with the help of the appliances like phonographic record and audio tape for utilizing it later on as when needed for the teaching and learning of a subject. The voice and sound recorded in the phonographic record can be reproduced with the help of the phonograph instrument and the sounds recorded in the audio tapes can be recorded through another instrument know as tape-recorder. However, the tape-recorder proves more effective in terms of recording as well as reproducing the voice and sounds in classroom teaching in comparison to the phonographic recordings.

For the preparation of audio-tapes filled with the original voices and sounds, the following points prove quite useful.

1. The teacher must let himself properly acquainted with the operation and working process of the tape-recorder. He must know what the different instrumental words like "STOP, FORWARD, REWIND, PLAY, RECORD, *etc.*" written on the different push buttons means and how these buttons are pressed for carrying out the different operations related to the tape-recorder instrument.

2. The teacher should acquire the necessary knowledge and skill for placing a metallic coated plastic tape of audio-cassette in the tape-recorder. After placing this tape or cassette properly in the tape-recorder the teacher has to press immediately the 'RECORD' button for recording the voice or sound as it is being produced by an RECORD button for recording the voice or sound as it is being produced by an object or person. Immediately after pressing this button many mechanical and scientific processes relates with the recording of the sound spring in the action. The voice produced by the spacer in the form of sound waves is picked up by the microphone of the tape-recorder and instantaneously converted into a series of varying electrical impulses. These impulses are retained in the form of magnetic impressions on the tape while needed. These magnetic impressions can be changed into electrical impulse and subsequent sound waves (identical to those originally set up during recording) at the time or reproduction of the recorded voice with the help of pressing the "PLAY" button.
3. While recording due care is to be taken for recording only that sound or voice which needs to be recorded in the tape. For this purpose no voice or sound is to be made at the recording speaker should be asked to speak in a strong voice and the volume control should be adjusted in the way as to record the least audible and weak voice.
4. Video tapes are also be prepared on the similar lines as discussed above in the case of the preparation the audio tapes. Here we have to make use of Video Cassette Recorder VCR instead of the tape-recorder. This appliance like the tape recorder also consists of the appropriate mechanical controlling devices operated through the various push buttons marked as STOP, FORWARD, PLAY, *etc.* The recording made on the video-tape is the valuable treasure of preserving not only the original voices and sounds but also the sights and visual experiences associated with the voices and sounds. In this way video-tapes may assist us to listen as well as watch the speaking and moving figures and thus gain valuable experiences for the teaching and learning of the various subjects of the school curriculums.

PREPARATION OF TRANSPARENCIES

We require a transparent visual while making use of an overhead projector. These transparent visual are named as transparencies. The light is passed through the transparency (placed on the horizontal stage) and then is reflected on the screen behind and over the head of the teacher or speaker to provide quite enlarged image of the graphics or written material present in the transparency. A Teacher for its effective use must learn the art of the preparation of the needed transparencies. Let us discuss about it.

PREPARATION OF HAND-MADE TRANSPARENCIES

The following points may be kept in mind for their preparation:

1. Try to use tri-acetate sheets of minimum thickness for providing transparent visual surface. These sheets are available in large rolls of 75 cm width, which could be cut, into sheets of 20 × 25 or 25 × 25 cms dimension. These can then be properly mounted on suitable Cardboard mounts for placing on the overhead projectors platform.
2. For drawing visual presentation on the tri-acetate sheets, indirect method in the form of tracing should be preferred. First try to draw the required visual by limiting its size to 18 cms. × 22.5 cms by leaving a margin of 2.3 cms on a white paper and then it should be properly traced on the tri-acetate sheet pieces of 20 × 25 or 25 × 25 cms size leaving a good margin or border.
3. For tracing the visual from the white paper to the transparent acetate sheet, the acetate sheet is placed over the paper and kept in position by paper clips, pins or self adhesive tape.
4. Try to use appropriate markers for tracing on the transparent sheet. If you need the transparency for temporary use the temporary markers like water colour or soluble ink marker may be easily erased or wiped off with the help of damp cloth. In case you need re-usable transparencies, then use oil, spirt or wax based permanent markers like cool chisel marker. One can also make use of hector carbon paper for tracing the drawing and type written impression on the acetate sheet.
5. For the safety and permanent use of the transparency, try to protect its surface by either clear varnish spray of keeping another acetate sheet over it.
6. Always use bright, harmonizing or contrasting colours for writing or tracing on the acetate film. In every situation the size of the letters or figures drawn on the transparency should be such that the student present in the class could properly visualize their projected images on the screen.
7. For drawing, writing or sketching on acetate sheets you may first coat it with a good quality gelatin. On this coated surface you can then right or draw with a good quality Indian Ink.

PREPARATION OF MACHINE MADE TRANSPARENCIES

For the preparation of these transparencies you can proceed as under.

1. Try to write, draw or sketch on a tracing paper or an art paper, the required visual presentation. It is the original copy of your presentation.
2. Next try to prepare a master photocopy by reducing or enlarging the original to a maximum size of 20 cm × 25 cm suitable for overhead projector projection.
3. Now use either a photocopier for obtaining copies from the master copy of the presentation over the acetate sheets. The copies from the photocopier

is usually black and white. However, we can also have coloured transparencies alongwith black and white through the use of a thermo copier operation on the principle of exposing transparency to infrared rays. Hence while using a thermo copier *i.e.*, zeroxets transparent acetate sheets are placed together with the master copy of the presentation in the machine. Thermal exposure helps in transferring the visuals of the master copy on the transparent sheet just in 3 or 4 seconds.

5

Methods of Teaching and Learning

The variety of teaching and learning methods which is used within a course is an important ingredient in creating a course with interest to students. A course with a large proportion of its teaching taking place in lectures will need to have a high level of intrinsic interest to students to keep them engaged. Over the past few years, a wide range of different teaching and learning methods have been introduced and tested, often with the aim of developing skills which more didactic methods are poorly adapted to do.

There is a substantial literature on these methods and on how best to use them. It is not possible here to provide great detail on every possible teaching and learning method, so instead we have focused on some of the issues which could be considered by course teams when choosing the components of their course. A useful document to refer to is the Guidelines for Promoting Effective Learning, produced by the Centre for Research on Learning and Instruction and also available in the TLA Centre.

LECTURES

Fifty-minute lectures remain the core teaching method for most undergraduate courses. Their role is best suited to providing an overview of the subject matter and stimulating interest in it, rather than disseminating facts. Lecturing to large classes is a skill which not all staff have acquired and some are not comfortable in this role, and so, where possible, a course organiser is advised to try to spread the lecturing load so as to favour those staff with best skill at it, although freedom of action in this respect is often limited!

All students appreciate good quality lectures, and the key ingredients are:

- Clear objectives;
- Clear overhead acetates or slides;
- A paced delivery;
- Appropriate handouts which provide students with complex diagrams or difficult or critical text.

This should not be viewed as spoon feeding. It is part of the process of ensuring that students take away the important elements from a lecture, irrespective of how well the lecture was delivered on the day. Good handouts also help to avoid the communication difficulties which can arise in any lecture where large numbers of students are present.

As class enrolments have risen and lecture theatres are used continuously, ease of access by students to the lecturer at the end of a lecture has been reduced. Providing agreed times and places, as soon as possible thereafter, when they can get questions answered is becoming an important issue. A more radical approach to the problems of the large 'performance' lecture is to consider the extent to which some lectures could be removed entirely and replaced by structured exercises. To some degree, those students who do not attend lectures follow this path anyway!

TUTORIALS AND SEMINARS

After the lecture, this is probably the next most widely used teaching method. The distinction between what is a tutorial and what is a seminar is woolly to some it depends upon size whereas to others the seminar has a different structure and different objectives. This last point objectives is certainly the most important issue, and it is probably here that most confusion exists in students' minds, and sometimes in tutors' minds too. Clarity of objectives is more important for tutorials than for lectures, in that there is general agreement and expectations for lectures whereas there is certainly greater divergence for tutorials. Much tutorial work is carried out by part-time staff, especially for courses in the first two years, and they too need to be clear about what they are trying to achieve with their students. When asking students about tutorials, the paradoxical finding that they complain about them but ask for more/more frequent tutorials is perhaps closely related to their perception of their need for small group support but lack of clarity about what they should be getting out of what is provided.

Making explicit what students should get out of tutorials can be quite a taxing exercise for the course organiser. A new addition to the tutorial format is that of electronic tutorials via e-mail, sometimes managed in a WWW forum such as HyperNews. Although rather few courses outside those which are traditionally computer-oriented have experimented with these methods, they hold out promise for those courses where students are difficult to bring together or to enable exchanges between face-to-face sessions. The active nature of the tutorial/seminar makes it the main source for students to acquire some of the 'personal transferable skills', *e.g.*, in presentation and group work.

LABORATORY AND PRACTICAL CLASSES

For science subjects, laboratory work is an essential ingredient of the course and some component of this is generally preserved, even though the amount may fall. In addition to the experience of lab work, students often derive a lot of their contact with staff in the lab setting, and compensation for this may be needed if lab time is significantly reduced. High quality lab work is expensive to provide, and it is important that we are sure that students do indeed gain all that they might from it, especially as the number of students present may have increased, more part-time demonstrators are used, and the frills have been trimmed to cut costs. The balance between fewer but better labs and more but simpler is not always easy to find, but is an important consideration.

OTHER TEACHING METHODS

Other methods that may be considered are numerous, including:

- Workbooks, diaries, and lab notebooks;
- Computer-based methods;
- Fieldwork;
- Learning in hospital wards and clinics;
- Independent learning tasks;
- Essays, dissertations and projects;
- Library searches;
- Portfolios;
- Posters;
- Videos.

Judicious use of them gives students the chance to use a variety of learning techniques so that each gets one or more which suits them best. If you find a possible method but are unsure how best to introduce it to your course, search out someone who has used it and pick their brains. You will probably find that TLA Centre can point you to such people, even if they may not be in the University of Edinburgh.

STUDENTS WITH DISABILITIES

The University has growing numbers of students with disabilities who may present particular challenges to courses with large numbers of students. For example, a profoundly deaf student may be able to follow a lecture with the help of a sign language interpreter, but will not be able to take notes at the same time. A blind student may need special help with practical sessions. It is not possible to give detailed general advice on making the variety of teaching and learning methods described in this manual accessible to disabled students. However, the kind of support which they are likely to find helpful *e.g.*, provision of good handouts often benefit all students. Students with disabilities are students first and foremost, and in many cases a little thought and ingenuity on the part of lecturing staff is all that is required in order to allow them full benefit from their classes.

COMPUTER SUPPORTED LEARNING

Just as it will be the course organiser's responsibility, in consultation with colleagues contributing to the course, to co-ordinate the availability of resources in the Library all other aspects of resource-based learning will require forward planning with which the course organiser will have to be involved. Various learning technologies are increasingly being used in support of the learning process, presenting new challenges and opportunities for staff and students. A major resource being used more frequently is the World Wide Web. An example of its use in presenting information about course content is given in Case Study 1 at the end of this stage. Wholesale importation of computer-based learning activities across the curriculum is unlikely to be a wise or desirable move for any course. CBL enthusiasts have been predicting significant gains in quality and efficiency of the teaching and learning process for many years, but the realities have, as yet, been less clear cut. On the other hand, computer-based approaches in education have been subjected to more demanding criteria of evaluation than the more traditional approaches have ever had to face. One of the real benefits of the recent interest in new learning technologies has been the reassessment of our more familiar approaches, which has in itself been useful. There are undoubtedly areas of the curriculum, however, in which the appropriate and targeted use of learning technologies will be of considerable importance, affording students the opportunity to engage with materials and resources which would otherwise be impossible.

In particular, the confluence of computer and communication technologies suggest exciting possibilities for the use of computer-mediated communication, in the form of electronic mail or computer conferencing systems, in support of tutorial and group work.

While students are facing increasing financial pressures, with the implication that many are functionally in part-time education, the asynchronous communications with teachers and peers which CMC potentially offers can ease conflict between employment and study. Many subjects, from Fine Art to Neuroanatomy, will benefit from the possibility of networked access to high quality images which may be in short supply, if not completely inaccessible, in the printed form. Computer simulations of practical exercises can allow us to address some of the problems inherent in teaching large classes, provide access to experimental domains which would not otherwise be possible for reasons of cost or personal safety, and circumvent many of the ethical difficulties associated with some areas of research. Many organisations and agencies exist which can provide help to the teacher or course organiser wishing to become involved with the use of IT in the curriculum.

TECHNICAL TEACHERS TRAINING

Even though often less acknowledged, the importance of a good teacher is enormous in India. They play a vital role in the overall development of the

students. Not only are they responsible for imparting academic knowledge, but are also responsible for inculcating the right values and principles to their students. The importance of teachers is especially enormous during the formative years of children when they first join school. Therefore it is very important to have professionally qualified teachers to ensure the right development of students. At present there are several colleges and institutes offering Teacher's Training Courses in India. Since the needs of the primary students are different from the secondary students, the primary teachers and secondary teachers are required to take up different teacher's training courses. Therefore there are different teacher's training institutes offering:

- Basic Training Certificate (BTC)
- Junior Basic Training (JBT)
- Nursery Teacher's Training (NTT)
- Diploma in Education (D.Ed),
- Primary Teachers Training (PTT),
- Bachelor in Education (B.Ed)
- Other Teachers's Training Courses.

PRIMARY TEACHER'S TRAINING (PTT)

Well-trained teachers are capable of improving not only the quality of education in India but also the quality of life as they are actively engaged in building the human resource of the future. Primary Teacher's training is even more important as elementary education plays a very important role in a person's life. As they need to take care of the emotional needs along with developing the cognitive skills of the students primary Teacher's training is regarded as essential. Because of theses reasons Primary Teacher's training (PTT) is made compulsory in various states for appointment as primary teachers.

On this page we have tried to cover the institutes in India that offer the Primary Teacher's Training (PTT) courses. We have tried to provide as accurate information as possible while compiling this list of PTT institutes in India. However, if you come across any discrepancy or error, do write to us about it. We would welcome any kind of feedback that will improve the quality of this page-a page that concentrates on providing the best information on PTT institutes in India.

DIPLOMA IN EDUCATION

As elementary education plays a very important role in a person's life and also in the development of the nation, the need to train the teachers is increasingly been realized. In India there are different institutes that provide Diploma in Education, D.Ed. This diploma in education would help the teachers in developing their cognitive skills and also in taking care of the psychological needs of the students. The D.Ed-Diploma in Education, India is gaining popularity as various states have made it compulsory to have D.Ed to be eligible for appointment as teachers. Many institutions offering D.Ed-Diploma in

Education in India Teacher training in India is offered through a number of institutions across the country. The various institutions offering D.Ed-Diploma in Education, India include the following:

- Adarsh Junior College of Education, Maharashtra
- Adhyapak Vidyalaya, Junior College of Education, Mumbai
- Basic Training Institute, Raipur, Madhya Pradesh
- District Institute of Education & Training, Ambala, Haryana
- Hindu College Of Education, Haryana
- Padmashree Academy for Creative Teaching, Bangalore.

Qualification: For admissions to the D.Ed-Diploma in Education at various institutes in India, the minimum qualification required is completion of 12 years of basic education. Also 50% is the minimum marks required in the qualifying examination to be eligible for Diploma in Education.

BACHELOR OF EDUCATION (B.ED.)

Teachers play a very important role in a student's life. It is, to a great extent, the teachers who decide the shape a student's life will take. So, it is very necessary to be adequately equipped with resources that will make the teacher a perfect role model to the students. To achieve this, Bachelor of Education or B. Ed was introduced, which will teach a person about teaching and the various aspects associated with teaching.

Once a person completes the Bachelor of Education (B. Ed) coaching or training, then he is awarded with a B. Ed degree.

There are some important reasons as to why one should opt for B. Ed course. After training one becomes efficient in teaching subjects of his specialization on the basis of accepted principles of learning and teaching. The course develops skills and widens understanding so that one can impart quality education to his students. The course also teaches about the attitude and makes him skilled in coming up with innovative teaching techniques. One becomes more competent in understanding psychological principles of growth and development and individual differences of the students he teaches.

There is a separate section in this course where the candidate learns to guide the children and counsel them in solving their personal and academic problems.

Top B.Ed colleges in India: If anyone is willing to have a strong foundation of teaching, it is always prudent to seek admission in some of the reputed B. Ed colleges in India.

Among them are:

- Jamia Millia Islamia, Maulana Mohammed Ali Jauhar Marg, New Delhi
- A.G. Teachers College, Ahmedabad
- Himachal Pradesh University, Department Of Education, Shimla
- D.M.College of Teacher Education, Imphal
- Andhra University, Visakhapatanam
- University of Bombay

- St. Xaviers College of Education, Patna
- College Of Teacher Education, Kozhikode
- NSS Training College, Pandalam.

Indian Universities offering B.Ed course Correspondence courses: Besides the above mentioned colleges, there are some universities which offer integrated course on Bachelor of Education.

- Annamalai University
- Bangalore University
- Jamia Millia Islamia Institure of Post Graduate Studies and Research
- University of Kerala, Institute of Distance Education
- University of Madras
- Maharishi Dayananad University
- Mother Teresa Women's University
- Patna University
- SNDT Women's University.

The demand for qualified and trained teachers all over the country has made the students choose B. Ed to ensure a good teaching job.

BASIC TRAINING CERTIFICATE (BTC)

The quality of the education system plays a major role in the development of the country as it builds up the human resource of the future. But the sustenance of a vibrant educational system depends to a large extent on the quality of teaching at the elementary level. In order to improve the quality of the teachers, the government of India has set up various institutes that provide Basic Training Certificate (BTC) after the successful completion of a course in teacher's training. The institutes providing Basic Training Certificate (BTC) courses are set up in almost all the states in India so that maximum number of teachers can avail the training and help improve the quality of education in India. The basic training certificate courses in the field of education are increasingly becoming popular as recruitment boards of primary teachers in various Indian states regard the BTC as a part of the minimum eligibility criteria for appointment of primary teachers.

There are several institutes that offer Basic Training Certificate (BTC) Courses in India for teaching at the elementary stage. On completion of the Basic Training Certificate (BTC) Courses from an institute in India, one can apply to various primary schools.

JUNIOR BASIC TRAINING IN EDUCATION

The concept of JBT-Junior Basic training in India is a result of the realization that education received at the elementary level shapes the human personality in more ways than one. It is therefore in the interest of the students that they be taught by trained teachers who can develop the cognitive skills and also take care of the emotional needs of the students. The junior basic training Institutes (JBT) have come up in India mainly to train the teachers who are actively engaged in imparting education to the tender aged children.

ELIGIBILITY AND ADMISSION CRITERIA FOR JBT-JUNIOR BASIC TRAINING IN INDIA

In some of the states in India the JBT or Junior Basic Training course is conducted for a period of two years. Entrance test is also conducted for the admission of students to this course. Apart from the government institutes there are quite a number of private institutes that conduct junior basic training courses in India. A certain number of seats are also kept reserved as per the rules and regulations mentioned by the government. Students who have passed their 12th standard board examination or equivalent are eligible for taking admission in this course. In some of the states in India a minimum percentage of 50% marks in 10+2 examination is essential for the students willing to join this course. Candidates with a bachelor's degree seeking admission to this course should have a minimum percentage of 45% marks. Candidates should be between seventeen to twenty eight years of age. Five years maximum relaxation in the upper age limit is given to the reserved category candidates.

JUNIOR TEACHER'S TRAINING CERTIFICATE COURSES

As schools bring together students from different sections of the society, training of teachers is very important so that they can take care of the differential needs of the students. Junior teacher's training certificate courses are designed to impart training to the teachers so that they can make the students confident enough to face the challenges of the future. Teachers trained through JTTC are expected to be actively engaged in the whole process of producing enlightened citizens of the country.

ELEMENTARY TEACHER EDUCATION (ETE)

Elementary Education refers to the education imparted to children between the age group of 4 to 14 years. The education system in India is supposed to be the second largest and well-developed after America but in the rural areas, the number of drop-outs at the elementary level is quite high. The government, however, is taking steps to enhance the scenario and has been creating programmes that would make education easily accessible to everyone and also ensure that they continue with higher education. In order to strengthen elementary education in India it is also essential to provide proper training to the teachers entrusted with the duty of educating the students. There are quite a number of institutes that conduct elementary teacher education (ETE) in India.

Elementary level education lays the foundation of learning in a child. It is, thus, very important that teachers acquire proper training in order to handle children at the elementary level. The course includes all the major aspects of the field of study. Apart from the theory part, teachers also go through practical training courses.

However, candidates willing to pursue an elementary teacher education course in India need to fulfil the admission criteria as mentioned by the respective

institutes. Candidates who have qualified their 10+2 examination or equivalent from a recognized board with the minimum percentage of marks are eligible for admission to this course. The growing need for trained teachers for the proper functioning of the schools have compelled private institutions to start various courses in elementary teacher education in India.

TECHNICAL TEACHERS' TRAINING INSTITUTE (TTTI)

Technical Teachers' Training Institute, Chennai is a resource institute established by the Government of India for quality improvement of technical education in our country and in the Southern region in particular.

Technical Teachers' Training Institute, Chennai is a model human resource development Institute for planning, designing, developing, organizing and evaluating quality training programmes, research studies and learning packages for technical and vocational education, industry and community. The Institute strives continuously and vigorously to further enhance its sensitivity to environmental changes and reach greater heights of excellence through active collaboration with national and international agencies on Projects and Programmes aimed at quality improvement of technical education systems.

ABOUT TTTI

The Technical Teachers' Training Institute (TTTI), Chennai, was established in 1964 by the Government of India as a key catalyst institution for ensuring quality in technician education in South India comprising the states of Andhra Pradesh, Karnataka, Kerala and Tamilnadu and the Union territory of Pondicherry. The mandate of the Institute is to take initiatives to offer need based HRD programmes through appropriate modes and develop curricula and instructional resources. It will also foster research and offer consultancy and extension services for the total development of polytechnics and other technical and vocational institutions, the Directorates managing these institutions, business, industry and service sectors and the community at large.

In carrying out these, the Institute will collaborate with national and international agencies interested in and/or deriving benefits from technical and vocational education including business, industry and service sectors. TTTI, Chennai an autonomous organisation has made substantial and significant contribution towards improving the quality of technical education in all its aspects. Though during the initial stages the emphasis was on training of teachers, over the years the emphasis has gradually changed to assisting the state governments and the polytechnics in the region towards improving their education process and products. This has led to diversification of the Institute's activities to suit the requirements of the clientele system.

M.ED. (MASTER OF EDUCATION)

As the education sector is attracting adequate attention in the age of structural adjustment and economic reform, Master of education (M.Ed.) is increasingly

becoming a preferred career course for many Indians. This has also helped in the growth of the M.Ed. Career Colleges in India. The M.Ed Courses in India are generally pursued after the successful completion of the Bachelor of Education (http://www.indiaedu.com/b-ed-colleges/index.html) (B.Ed.) courses. It is a Post Graduate degree course offered at most of the District Institute of Education & Training (DIET) centers across India. In India M.Ed (Master of Education) is mainly offered by institutions that are recognized by National Council of Teacher Education, New Delhi. It is a government body in charge of improving and implementing teacher education programmes in the country. It is essential to pursue the M.Ed. courses if you are interested in pursing a teaching career. M.Ed. is considered an important course as it helps the students to learn the education systems and patterns more profoundly and comparatively. In every state in India there are several institutions that offer Master of Education courses. The eligibility criterion for admission to this course is that candidates must pass their Bachelor of Education B.ED from a reputed institution in India.

STUDIES IN INNOVATIVE TEACHER TRAINING PRACTICES

Most of the studies in this category are impact studies as these ascribed the change in product variables to the ongoing teacher-education programme. They investigated the product variables when the student-teachers entered the existing system and later when they were just about to leave the college. Mehta (1985) and Pillai (1985) studied the impact with respect to change in attitude towards teaching, motivating factor for choosing teaching, and change in values.

Banga (1983) studied the impact of a teacher-training programme in physical education on physical fitness, personality characteristics, adjustment and maturity of student teachers. Kudesia (1986) studied the effect of a technical teachers training programme on teaching skills. All these researches concluded that a change in student-teachers' behaviour took place because of training. In a similar context, some researchers compared trained and untrained teachers on various product variables and found trained teachers different from their untrained counterparts. Bhide (1987) compared them on self-concept. Researchers like Das (1979) went a step further and compared trained and untrained teachers of primary level on their ability to solve the problem of wastage and stagnation. However, results revealed that training of teachers did not contribute to checking wastage and stagnation.

Some researchers compared the products of two different operational schemes of teacher education. Singh (1985) compared teaching competence, role performance, and attitude towards teaching of teachers trained through a one-year B.Ed. course and a four-year integrated teacher-education course run in the regional colleges of education. The teachers of the two courses were not found to be different. Gogate (1983) went a step further and studied the effect of a training programme not only on teachers but also on teacher education and extension education workers. The training programme was organized for the

education of socially and economically backward children. A change was found in the awareness of the subjects involved in the training programme about the methods of teaching required for the target group. However, a close look at all these studies shows that the impact of present teacher-education programmes has been investigated only at the peripheral level. A deeper analysis is needed so as to study the impact of training at social, economic and cultural levels, The researchers need to study the impact of training with respect to teachers' contribution to society as a factor of social and cultural change.

STUDIES IN INNOVATIVE TEACHER TRAINING PRACTICES

The second set of studies used some innovations in operational teacher education programmes. The innovations used had. been concerned with various aspects of teacher-education programmes. Researchers like Bhatt (1966) studied the effect of the Kapason training scheme where student-teachers, apart from usual practice teaching and theory, were also trained in organizing creative activities in arts and craft. The training was found to be effective. Adinarayan (1983) trained student-teachers in stating objectives, analysis of the context and techniques of evaluation. The experimental group was found to be better on inquiry and investigatory skills. All such studies introduced specific innovations in the operational teacher-education programme and investigated its effectiveness. There are other studies that used innovations concerned with the theory or practice teaching part of the teacher-education programme. The innovations in the theory part had been development and use of self-learning material and the use of mass media, whereas in the case of practice teaching part, the innovations were behaviour modification techniques, microteaching and training in models of teaching. Most of these studies are experimental in nature and employ experimental design as per their objectives to judge the effectiveness of the innovations with respect to teaching competence.

(i) *Studies in Use of Learning Material:* The innovations of teaching through instructional strategies motivated researchers to develop self-learning material and study its effectiveness in the field of teacher education also. Sangaun (1984) developed programmed learning material, Jayalakshmi (1985) developed instructional material and Bhatt (1982) developed software material to be presented in simulation or programmed learning style. All of them took up the subject of educational psychology for developing instructional material. They studied the effectiveness of the material with respect to trainees' achievement and attitude at different levels of sex, SES, intelligence and English reading comprehension. Lambhate (1987) developed instructional material for teachers teaching science with relevant rural aids, graphics and models. These studies made use of the Skinnerian approach for the development of instructional material. Researchers like Sheth (1984) developed a self-instructional multimedia package for developing teaching skills among teachers. Some researchers went

a step further and developed instructional material for remediation of deficiencies. Swamy, N. (1984) developed a diagnostic test and learning material for remediation of deficiencies in secondary school physics for student-teachers. Mukherjee (1983) identified reading disabilities of teachers in English language and developed remedial self-instructional material for the same. Researchers like Datar (1984) developed question banks in educational psychology. However, there is a need to develop self-instructional material in structured form from the different theory papers of teacher-education programmes. Researchers also need to develop instructional material for remediation of deficiencies in language, sciences and social sciences for teachers/ student-teachers especially at primary level, the reason being that, at primary level, the teachers are less educated and require more subject clarity.

(ii) *Studies in Use of Mass Media:* With the advent of television and radio programmes in India and the stress of national bodies like the UGC and NCERT on the use of television in teacher-education programmes, researchers have been tempted to make studies in this direction. Mohanty et al., (1976) surveyed the reaction of teachers to educational TV programmes for in-service primary teachers. In yet another study, the same researchers assessed the popularity of radio programmes among the participants in an in-service teacher education programmes. These studies were primarily conducted with the objective of providing feedback to the media managers for their teacher education programme. Now, when there is increased use of media like television and radio in education in India, it is desirable that studies be conducted in different regions of the country to evaluate television and radio programmes in teacher education. The researchers also need to plan studies to assess the improvement in teaching competency of teachers because of use of mass media in teacher-education programmes.

(iii) *Studies in Microteaching:* In practice teaching, one of the innovations that has attracted the attention of researchers is microteaching. The research in this field in the beginning aimed mainly at finding out effectiveness of microteaching with respect to improvement in teaching competence. But after its effectiveness was established and it was made a part of teacher-education programmes in many universities in India, the researchers conducted studies in improvement in components of various teaching skills, strategies for integration of different teaching skills, effect of different types of feedback and sources of feedback, development of multimedia packages for training in teaching skills. Such a trend in research studies is helpful in adopting the innovations in different sets of conditions.

There are 49 studies in all in the field of microteaching out of which 22 are reported in this survey. Yogendrakumar et al. (1980), Naik (1984)

and Thakkar (1985) went in for establishing effectiveness of microteaching with respect to improvement in teaching competence of student teachers. Researchers like Sharma (1980), Lalitha (1981), Sharma (1982), Bawa (1984), Bhatia (1984), Chathley (1984), Dave (1987), and Ekbote (1987), studied the effect of different strategies of integration of skills on teaching competence of student teachers. It can be concluded from their findings that planned integration of skills is helpful in improving teaching competence. Some researchers compared various strategies of feedback used during the process of microteaching. Syag (1983) and Prabhune et al. (1984) compared three strategies of feedback, viz., self (audio-feedback), peer and supervi-sory feedback. They found peer-feedback to be most effective in improving competence in teaching skills. One feature common to all these researches is that they use teaching competence as a criterion to measure attainment of skills. But these studies are unable to answer the question, 'What minimum level of competence needs to be achieved when a teaching skill is said to be attained?' In this direction, Joshi (1984) made a venture and developed a performance criteria for testing efficacy of student-teachers in attaining teaching skills. Further, product variables considered in the studies were not only general teaching competence but also pupil attainment, pupil liking, peer assessment, headmaster's perception, attitude of student-teachers and teacher educators towards microteaching (Sidhu, 1983; Khan, 1985; Kalyanpurkar, 1986; and Oak, 1986).

Almost all these studies are experimental and employed pretest, post-test control group design. Among these, Sidhu (1983) and Syag (1983) went a step ahead and conducted longitudinal studies. They studied the carry-over effect of microteaching on different product variables just after training, six months after training and two years after training. They came out with the conclusion that microteaching training retained its effect over time. More studies of this kind are required to arrive at generalizations. Further studies in microteaching are required to specify skills that are required for teaching different subjects at different levels, viz., 'elementary, secondary and higher education. In this direction, Pratap (1982) made a venture and studied skills required for teaching modem mathematics at secondary level. More studies in this direction will help for planning the teaching of different subjects.

The researches done in the field of microteaching are still at a preliminary stage. More imaginative and analytical studies are required so as to answer various questions like 'What specific skills are required for teaching different subjects? How many microteaching cycles are required to attain competence? What exactly should be the length of a lesson plan? What are the skill-relevant behavioural changes that take place during attainment of skill?' Apart from finding answers to these

questions, the researchers need to study the microteaching skills with respect to their proportion being used in the classroom rather than limiting themselves to a few most used skills in the classroom.

(iv) Studies in Techniques of Behaviour Modification: Still another training system that stresses specification of behavioural objectives, reinforcement of desired behaviours and rapid feedback of the effects of such reinforcement is the system of teacher behaviour modification. In this volume there is a separate chapter on teacher behaviour but in the present chapter only those studies have been considered that are connected with training of teachers in modification of their classroom behaviour. Shukla (1985) studied the effect of transaction training on different indices of teaching. Bhalwankar (1984) developed a scale suited to the Indian set-up for observing and training teachers in classroom behaviour indices. Dogra (1986) studied the effect of the content analysis system of classroom communication behaviour pattern. Gupta (1983) studied the effect of training in behaviour modification in simulation. The intent of these studies was to get teachers maximize the frequency of such indices that affected the pattern of learning in the pupils. They tested the proposition that using a particular system of recording teacher behaviour, and feeding the same back to the teachers, will get them to engage in more and more desired behaviour towards their pupils. The studies reported in this survey are a step in advance of those reported in previous surveys as these did not simply use the Flanders Interaction Analysis System to observe and train teachers/student-teachers interaction analysis; rather, they used interaction categories united to the subject taught by the teacher. But the question that remains still unanswered is, 'How can the behaviour of the teacher be modified through training be maintained over a long period of time? 'The researchers need to conduct studies in this direction so as to establish the lasting limits of learnt behaviour in teachers.

(v) Studies in Training in Teaching Models: The standard training models used in teacher education have been classroom interaction analysis and microteaching. These models are predominantly behaviouristic in nature. These have been used as training models, irrespective of the subject being taught and objective being achieved. However, the researchers have started trying out several alternative models for training in teaching of information, social interaction, behaviour modification, personal abilities, *etc.* Such a system of training includes elements like theoretical orientation, observation and demonstration, peer practice and feedback, and coaching in a real classroom situation. Passi et al. (1986) took up a study at the national level with a view to establishing the effect of these four elements on teaching competence in one particular model of teaching. In a similar study, Passi et al. (1986) studied the effect of training in models of teaching on the competence

of student-teachers and their willingness to use the same in their classrooms. It was found that training had a positive effect on the product variables of competence and willingness. Such studies represent a welcome trend in two ways. One is that they are a departure from a purely behaviouristic orientation in teacher education, and secondly they help in recognizing the fact that there are different models of teacher education with respect to different aspects of teaching.

Studies in training of teachers in models of teaching need to be designed to find out how far training in particular teaching model improves the conceptual level of the trainees, their teaching style, adoption of various skills and transfer and reutilization of the same in different situations.

The researchers need to find out specifically the number of demonstrations, practice sessions and coaching exposures that would help the student-teacher master a particular teaching model. Further studies also need to be done with respect to methods and types of feedback that could bring the desired level of competence in a student-teacher within minimum exposure time.

TEACHING METHODS

Research as a Basis: What criteria determine the best picture, the finest song the most compelling dramatic performance? How can one select the most effective teaching method when the product cannot be measured in pounds, spelling words, or centimetres? Because there are relatively fewer correct answers in the fine arts field, and more room for dispute than is encountered in the exact sciences, for instance, the use of research as a basis for validating fine arts teaching procedures has progressed slowly. As a subjective, personal-interpretative field, the fine arts do not lend themselves easily to measurement.

Research studies are becoming increasingly available, especially in music education, and recent serious efforts by research workers indicate that effective practices will be more available in succeeding years. The *Encyclopaedia of Educational Research* includes impressive bibliographies of research in the fine arts fields, and these lists in turn are updated regularly in the *Review of Educational Research.* Continued publication of the *Journal of Research in Music Education,* founded in 1953 by the Music Educators' National Conference, proves vigorous interest in musicology. The *Research in Art Education Yearbooks* similarly provide evidence of solid scholarship and reflect a growing concern for more effective teaching in art. All these references merit close attention by the future fine arts teacher.

Teaching Music at the Secondary School Level: To the pragmatist, music educators who urge a place for music on the grounds that music contributes to a variety of general and specific objectives of general education may be promoting philistinism. That is, by encouraging attitudes which attach a snobbish social status to music they may only further the idea the music is a frill. The aim of music education McMurray asserts, is to help everyone to further awareness of patterns of sound as an aesthetic component in the world of experience; to

increase each person's capacity to control the availability of aesthetic richness through music; and to transform the public musical culture into a recognized part of each person's environment.

While the psychology of music has received much attention, and good studies have been made of rhythm and pitch discrimination, reading musical notation, memorizing music, and musical performance, research in classroom instructional problems continues to be inadequate. The new music teacher seldom can afford the luxury of specialisetion. Rather he must expect to direct both vocal and instrumental groups and a class in harmony or music appreciation. As a consequence, the new teacher needs grounding in the several areas of musical knowledge. Assuming this knowledge, the next problem is that of organizing classes and obtaining appropriate instructional materials.

The music teacher has peculiar problems in group control, apart from those covered by guidelines described elsewhere in this text, in that he must alternate complete attention and concentration with brief moments of relaxation. With adolescents, rigid attention cannot be maintained for long periods. Inexperienced teachers know this, but they often err in tolerating unnecessary confusions at breaks. Thus, arranging the seating for the chorus involves a recognition of individual behaviour as well as voice quality. Pals may have to be separated until they learn greater responsibility. Band and orchestra directors also face unusual problems in deportment; keeping violin bows out of a neighbour's eye, protecting costly instruments from damage, and keeping musical scores intact depend largely upon discipline and student respect for their director.

Appreciation classes may be seated in straight rows without concern for individual aptitude or, ideally, they may be arranged informally so that listening to fine music becomes associated with home furniture arrangements. Some schools, which house music classes in a separate building or wing, cover entry ways with carpeting and place floor lamps at appropriate intervals in order to establish an association between music and the home. Prints or paintings on the walls also further the impression.

Music classes require delegation of assignments to students. The teacher generally will see that students are responsible for distributing and collecting books and scores and that each class is organized so that housekeeping chores are fulfilled quietly and quickly. Attendance also is taken by students, ordinarily, to free the teacher to do teaching' Failure to organize his classes from the start, with the foregoing considerations in mind, places the new teacher at an unnecessary disadvantage. While beginners can expect the school to provide physical facilities, books, instruments, printed music, chalk and chalk-boards, an immediate inventory of supplies and equipment is advisable. If records are not current, they should be made current. Deficiencies should be noted, and prudently reported, for the music teacher and department of music have annual budget battles to face as they compete for funds. Regular perusal of music journals is recommended in order that sources of supplies be identified early, contacts made with commercial firm representatives, and prevailing thought

regarding facilities, procedures, and supplies be made known. Finally, bookkeeping files should be established to inhibit loss through pilferage, misplacement, and deterioration. Supply receipts should be catalogued and probable replacement needs listed well ahead of necessary delivery dates.

Teaching Vocal Music: Music teachers must take vocal talent where they find it; typically, they do not recruit or proselyte singers. While the chorus and glee club may accept many youngsters of mediocre ability, and encourage their participation in singing with large groups, the teacher must identify the better singers and work steadily with them if school operettas and pageants are to be successful. Unusually gifted young singers bring glory and professional pride to their teachers, yet these youngsters also must be fitted to an existing group and voices must be blended and balanced. The vocal quartet is a popular feature for school assemblies and service club luncheon meetings, but requires many hours of supervision. Madrigal singing is possible when talent is abundant and teaching time made available.

Vocal music teaching usually is organized around fixed holidays and production dates. Christmas concerts, carolling, and pageants need weeks of preparation. Commencement day ceremonies typically include vocal numbers while operettas and television appearances require many hours of patient drill and rehearsal. Moreover, the teacher may be expected to produce suitable entertainment on a day's notice when the Rotary Club's programme chairman calls. Vocal teachers have unusual opportunities to work closely with youngsters in solving personal problems. Sometimes, singing proves a wholesome outlet for emotions and energies and has been found to provide effective medicine as well as enjoyment in delinquent groups. The teacher who sings and talks all day long, working for musical proficiency and social adjustment, must watch his own voice control. Teaching voice is hard work, year after year, and pacing is important.

Teaching of Instruments: Physical weaklings cannot direct school bands or orchestras nor should the overlay sensitive make the attempt. The awful sounds which novices can make on school-owned instruments drive tender souls out of teaching. Yet the joy of delivering a fine concert to a receptive audience of proud parents compensates the teacher and makes the ordeal of preparation worthwhile. "All right, brasses, let's try that again!" And so the rehearsal goes on with slow and sometimes indiscernible improvement. Suddenly, Jim learns his part and Edith overcomes her timidity and the strings start listening to each other and working together.

String quartets are rare in secondary schools because of the proficiency required. Orchestras are possible in most schools, and marching bands and dance "combos" find increasing popularity. Schools today are encountering difficulty, however, in locating violinists and able players of other stringed instruments. Television is blamed by some, and prosperity by others, for what appears to be a serious reduction of home music lessons and private practising. Perhaps youth wants results without effort and is impatient with practice. In any event, it is easier to buy recordings.

A busy and important element is the pep band which performs at rallies, assemblies, and basketball games. Ten or twelve players are sufficient for the purpose and extreme skill is not necessary. But even the pepband and certainly the marching band will want attractive uniforms and further hours of the teacher's time. The intricate drills of marching bands require close coordination, planning, and much patience on the part of the teacher. Small instrumental ensembles such as the French Horn Trio, Brass Choir, and Trumpet Quartets can be very effective supplements to major groups, and serve to emphasize quality of musicianship.

Appreciation Courses: Extensive purchasing of audio-tapes and recordings together with high fidelity reproduction has enabled schools in very recent times to enlarge their roles in teaching music appreciation. With virtually all fine music available at nominal cost, school districts and individual schools have built musical libraries not thought possible only a few years ago. Through the "appreciation" course, fine music may be explained and played to quicken interest and sophistication in quality performance and composition. Such courses necessarily begin with explanation of the purposes and sounds of individual instruments, with opportunities and encouragement to listen for these instruments in recorded music. In the junior high school, so-called "general" courses in music may include listening to records as well as participation in singing and in learning the musical notation.

Related Activities: Musical enterprises which do not carry academic credit still require professional direction. Thus teachers are expected to sponsor musical clubs, train voices for operettas, and sponsor field trips and excursions to musical events. Steg, in tabulating the total workload of Michigan senior high school teachers, found that class instruction typically comprised one-half of the load; as many hours were devoted to public performance, activity programmes, and community service. Similar data certainly can be found in most communities; they attest to the devotion and stamina of teachers of music.

Professional Growth in Music Teaching: To achieve success in music teaching, one must not only work hard but also know sources of instructional aids, keeping alert always to those efficiencies which help to teach more with less effort. An excellent source of information is *Music Buildings, Rooms and Equipment,* a revision of the Music Education Research Council Bulletin No. 17 published by the Music Educators' National Conference, a department of the N.E.A. This publication covers types of music rooms, shells, acoustics, illumination and colour, heating and air conditioning, storage equipment, and audio-visual education with bibliographies and many floor plans and diagrams.

Another ready reference is *Music Education Materials: A Selected Bibliography.* This source is packed with lists of films and recordings and invaluable citation of books and articles of practical help to the new and to the established teacher of music. The novice may not be acquainted with *The Instrumentalist* (1418 Lake St., Evanston, Illinois) or the *Music Journal* (157 West 57th St., New York 19, N.Y.) Two helpful textbooks are those of Leeder and Haynie and Sur and Schuller.

Professional advancement is governed also by the extent of postgraduate work as well as by personal qualities of leadership and sincerity. Music teachers have a further problem in that their national accrediting agencies and professional groups have insisted upon both quantity and specificity of music courses to the consequent exclusion of supporting fields.

Thus a music "major" has much the same difficulty in fulfilling liberal arts courses as does the future engineer. (It is possible for the new music teacher to find that in striving to achieve proficiency in all aspects of music and music teaching, he has failed to become an educated person.) As Baird has reported, the requirements for certification of music teachers in actual practice often have been formulated by use of a "consensus" or "pressure group" approach.

When experts decide and include their favourite courses, the total number of academic units required in music often is out of proportion to that required for other baccalaureate majors. The result has been "a widespread difference of opinion as to the distribution of unit values allocated to general, professional, and music education. Within the area of music, like problems and controversies prevail on the distribution of units to music history, music theory, music performance, and methods."

Art of Teaching in the Secondary School: Probably the reader is too young to remember the times when teachers of art in elementary and secondary schools required much copying and tracing on the part of students. Rebelling against restrictive formalism, art teachers in the present generation have stressed freedom of expression, use of varied media, and emphasis upon creative power. Many schools of thought have arisen, but the persistent ones have held that instruction be adapted to the learner's experience and maturity and to his needs for self-expression.

Viktor Lowenfeld's influential *Creative and Mental Growth* suggests art experiences which match the learner's physical, social, and mental development. Thus, in a chapter entitled "The Dawning Realism," Lowenfeld describes the ages of nine to eleven as representing "the time during which the confidence of the child in his own creative power is for the first time shaken by the fact that he is becoming conscious of the significance of his environment." What appears to be a logical progression of activity to the adult mind may indeed violate assembled evidence regarding the psychological conditions which affect youngsters. Development of artistic awareness is not easily hurried; Schaefer-Simmern, for one, has traced the processes which children and youth undergo as they grope towards self-expression through art.

Scarcely anyone denies that programmes of art education for young people should be governed by knowledge of the nature of the learners. But in practice errors have been made of that same sort made by extremists who misinterpreted the credos of John Dewey. Gaitskell accordingly has found it necessary to say: In some quarters an idea became prevalent that although the teacher bad an important role to play in the teaching of subjects, where art was concerned it would be better to let the learners go their own way when this attitude has prevailed, nothing has proved worse for pupils or for art.

Direction certainly is necessary in art teaching as in anything else, but there remains the necessity to emphasize ideas over technique. "When the technique and not the idea takes paramount position... the producer becomes a craftsman and ceases to be an artist." Ideas should come from the experience of the student, just as theme topics should come from the experience of the student in English who is writing an essay. Contrived and artificial writing topics, or teacher-derived ideas in art, afford little student self-expression.

Teaching the Crafts: In his undergraduate preparation, the future art teacher takes courses in crafts and becomes adept at working with metal, leather, wood, paper, and ceramics. He learns the pleasures of shaping things out of simple and inexpensive materials. As a field wherein virtually anyone can acquire some skill, crafts have grown in popularity as secondary school art experiences.

Since schools provide instructional materials, it becomes the function of the art teacher to requisition supplies and order them from commercial firms in advance of need. How many pounds of clay will thirty students need in one semester? The beginning teacher in most schools will have plenty of precedent to follow in ordering supplies; if he is the only teacher of art, however, he will have to depend upon school supervisors from the county office, records of past orders, and his good judgment. Supply house catalogs will prove helpful, although individual salesmen may be more enthusiastic than realistic about probable needs. The *Craft Horizons* magazine (29 W. 53rd St., New 19, N.Y.) is recommended reading.

Housekeeping chores, for which the art teacher presumably had practice in his collegiate art courses, must be delegated efficiently. Students must learn that tidying up work spaces is a part of the art experience. Assignment of clean-up captains on a rotating basis is good practice, while supply-issuing may be controlled either by the teacher or by appointed students. Sufficient time must be budgeted for housekeeping lest carelessness and irresponsibility become learning outcomes.

Teaching Drawing, Painting, and the Graphic Arts: Acquainting students with the media, rather than trying to turn out finished work, is the sensible approach to secondary school art teaching in the fields of drawing, painting, and the graphic arts. Mixing colours and learning the techniques and purposes of perspective and shading take time and teach self-discipline; they are necessary requisites to artistic performance. Care of materials may seem a grubby chore to flighty youngsters and yet this, too, is an experience which must be provided by the teacher. In a one-year course the first semester will be devoted chiefly to the process of becoming acquainted with brushes, charcoal, pens, drawing paper, canvas, easels, inks, oils, and water colours. Opportunities will be arranged for little forays into practice and then, as the materials are learned, sketching trips and steady work in the classroom will follow. At all times the teacher moves about the group, helping with techniques, giving advice, and demonstrating to the entire class when several are having difficulty with the same process.

Evaluation of student work, as indicated earlier, is a difficult and subjective task. Art teachers are well-known for giving high marks, probably because they

tend to credit effort and growth and to minimize products achieved, and also because there are no precise standards for evaluating a drawing or painting. Points for perspective, proportion, and use of colour can be determined, and rating scales made, but it is still a matter of the master's judgment as opposed to that of the apprentice.

Courses of Appreciation: Art appreciation courses are concerned with questions of taste, form, and beauty and are intended to make clear the differences between beauty and ugliness, trash and quality, crudity and excellence. With time, learning can be achieved in making acquaintance of the intervening levels, the "shades of gray." Access to a good library of flat pictures, coloured slides, motion pictures, and crafts objects is essential if differences are to be emphasized. Inductive teaching is particularly helpful when a student group can agree that one art object is "more beautiful" than another and the teacher can tease out the reasons for student opinion. People like what they are accustomed to and the art teacher may find that his sophistication is far removed from that which he encounters in the community or among his students.

Related Activities: Art teachers often are expected to judge poster contests for patriotic and civic organizations, suggest materials for student displays and banners, and direct the preparation of exhibits and showcases. Art teachers may be able to assist in making stage sets for student plays. Larger schools may have art production classes which prepare signs and posters for school use.

Professional Growth in Art Teaching: Except in remote rural areas, opportunities for professional improvement and in-service education are abundant for the teacher of art. Summer sessions and late afternoon and evening courses and workshops in colleges and universities are increasingly available. Metropolitan centres offer galleries with varied offerings, and many colleges offer credit tours to San Francisco, Chicago, New York, and Europe for purposes of studying art exhibits. Many communities throughout America feature annual or semiannual art shows with teachers of art participating both as entrants and judges. Great collections of art have been placed on tour so that art is brought to the people. But none of these opportunities for enhancing skills and elevating tastes and knowledge profits the teacher who himself does not live art. For when he sees art in everything, his enthusiasm and zest for learning illumine his life and his teaching.

When students follows fellow teachers agree that a particular teacher "great," then certainly status is achieved and tangible rewards Nor are lavish budgets, palaces of learning, and great stores of supplies requisite to greatness. Not long ago a young man was appointed to his first teaching position late in September. He was to fill *tile, place* of a teacher who had broken her contract by neglecting to order supplies and then failing to appear at the start of the term. The students had been kept in the school cafeteria for three days; they were restless and rebellious. Apprised of the situation as he entered the school, the newcomer asked the distraught vice-principal if he could locate a roll of butcher paper and some crayons. Somehow they were found. Quickly unrolling the paper on the

work-tables, the new teacher asked two boys to distribute the crayons, then held up his left hand. "Do you see this? Now hold up your left hands!" Blankly, the students obeyed. "Now let's see who can draw his own hand so that I can recognize it." Startled and amused, some started right away; others looked around, unconvinced, then slowly began to draw. Soon everyone was working with intense concentration, happy to be busy, surprised to learn what their hands looked like, amazed at how difficult it was to draw a hand. There was no rebellion, no sullen apathy. And before the butcher paper ran out, the teacher had gone through the introductory amenities, rushed off supply requisitions, and had got himself and his classes squared away. In situations such as this, alertness, flexibility, and willingness to improvise can save the day. These qualities, coupled with a liberal education, a "major" in art, and professional education, should assure the beginner of signal success.

Teaching of the Dramatic Arts: Participation in a school dramatic production is a keen excitement and provides an unusually fruitful learning environment. The novelty of wearing costumes and make-up, the friendships developed through long rehearsals, and the constant pressure for cooperation and attention combine to make dramatics classes and activities superb opportunities for the good teacher to teach. Indeed, scarcely anyone in the school has more potential influence upon his students than does the teacher of dramatic arts.

Within the customary designations of "Drama 1" and "Drama 2" are and elementary acting procedures, stage presence, stage vocabulary, voice projection and enunciation. Practice in blocking out scenes will be provided. Class time will be given over to the reading of lines of plays selected by the teacher or, on occasion, to rehearsals for plays in which class members are participating. The characteristics of great plays will be examined and, according to the interests of the teacher and the group, time may be given over to study of make-up, set construction, and costuming. Inspection of study guides in the college curriculum library will reveal variations according to teacher competency and tradition within a school district. Drama classes may take leadership in organizing and administering a one-act play tournament either within the school or involving other secondary schools. In all circumstances, drama classes as electives permit the teacher more freedom in dictating standards of performance than is possible in required social studies or English courses. As a privilege, rather than an obligation, enrolment in the drama class assumes willingness to work, to cooperate, and to enjoy learning.

EVOLUTION OF TEACHING METHODS

ANCIENT EDUCATION

About 3000 BC, with the advent of writing, education became more conscious or self-reflecting, with specialized occupations such asscribe and astronomer requiring particular skills and knowledge. Philosophy in ancient Greece led to questions of educational method entering national discourse.

In his literary work *The Republic*, Plato described a system of instruction that he felt would lead to an ideal state. In his dialogues, Plato described the Socratic method, a form of inquiry and debate intended to stimulate critical thinking and illuminate ideas.

It has been the intent of many educators since, such as the Roman educator Quintilian, to find specific, interesting ways to encourage students to use their intelligence and to help them to learn.

MEDIEVAL EDUCATION

Comenius, in Bohemia, wanted all children to learn. In his *The World in Pictures*, he created an illustrated textbook of things children would be familiar with in everyday life and used it to teach children. Rabelais described how the student Gargantua learned about the world, and what is in it.

Much later, Jean-Jacques Rousseau in his *Emile*, presented methodology to teach children the elements of science and other subjects. During Napoleonic warfare, the teaching methodology of Johann Heinrich Pestalozzi of Switzerland enabled refugee children, of a class believed to be unteachable, to learn. He described this in his account of an educational experiment at Stanz.

19TH CENTURY COMPULSORY EDUCATION

The Prussian education system was a system of mandatory education dating to the early 19th century. Parts of the Prussian education system have served as models for the education systems in a number of other countries, including Japan and the United States. The Prussian model required classroom management skills to be incorporated into the teaching process.

20TH CENTURY

Newer teaching methods may incorporate television, radio, internet, multi media and other modern devices. Some educators believe that the use of technology, while facilitating learning to some degree, is not a substitute for educational methods that encourage critical thinking and a desire to learn. Inquiry learning is another modern teaching method. A popular teaching method that is being used by a vast majority of teachers is hands on activities. Hands-on activities are activities that require movement, talking, and listening, it activates multiple areas of the brain. "The more parts of your brain you use, the more likely you are to retain information," says Judy Dodge, author of 25 Quick Formative Assessments for a Differentiated Classroom.

6

Evaluating Student Learning

Assessing student learning involves evaluating their understanding and skills through various methods. These methods may include tests, quizzes, projects, presentations, and observations. Assessment aims to gauge students' comprehension, identify areas for improvement, and guide instructional decisions. It should be fair, valid, and aligned with learning objectives. Additionally, providing timely and constructive feedback is crucial to support students' growth and development. Effective assessment practices foster a dynamic learning environment where students are actively engaged in their educational journey and can demonstrate their progress accurately.

ASSESSMENT

The word “assessment” has taken on a variety of meanings within higher education.

The term can refer to:

- Standardized measures imposed on institutions as part of increased pressure for external accountability,
- The process faculty use to grade students’ course assignments, or
- Activities designed to collect information on the success of a course, a programme, or a university curriculum.

The suggestions in this stage focus on the latter two components of assessment:

1. Testing/evaluating student performance and providing feedback to students for grading purposes
2. *Assessing whether the course itself is “working” for student learning*: what is going well, what isn’t, and how do you know?

This second definition of assessment–determining what's "working" in the classroom– is particularly important in the early stages of innovative course design because assessment makes it possible to:

- Make informed improvements to current practices
- Document success to share with funding agencies, department chairs, *etc.*

At its best, assessment should be valuable to the teaching/learning process and not another add-on or "make work" of little use to instructors. In fact, assessment activities can be helpful in promoting all of the Principles of Good Practice.

EVALUATING STUDENT PERFORMANCE FOR GRADING PURPOSES

In assessing online learning, it is important to create a "mix" of assignments that cover the multiple dimensions of learning that online courses can employ. Traditional tests become a smaller part of the grade as you move towards encouraging student interaction on group projects and other activities.

Different forms of assessment include:

- End of semester paper
- Weekly tests
- Group projects
- Case study analysis
- Journals
- Reading responses
- Chatroom responses
- Threaded discussions participation

Communicate Expectations

As was suggested in the previous stage, students in online courses are in particular need of clear information about course requirements and instructor expectations. Therefore, develop specific grading guidelines for course assignments and activities ahead of time so students know in advance what is expected of them. For example, articulate what are appropriate responses to questions in online discussions, what is a substantive answer versus a superficial response, *etc.* Providing students with specific examples of the kinds of work you are looking for is also helpful.

Keep Track of Student Performance

The gradebook option in online software packages makes it possible to store all information about students' performance in one place. Many also make it possible for students to look up their own progress on assignments.

Give prompt feedback:

- At the start of the semester, clarify the type of feedback you will be giving so students have a clearer sense of what to expect from you.

- Students want feedback on assignments, but it is often difficult to provide much feedback when you use a number of varied assignments throughout the semester. One instructor uses system to provide a quick response to students.
- A number of grade book features have a comment part where the instructor can give specific feedback to a student on an assignment that can only be seen by the instructor and that student.

Design effective tests:

- Be clear from the start about what is allowed and what is not permitted when students take a test online.
- Because it is difficult to ensure that students taking an online exam are not using their books, some faculty encourage open book exams but place a time limit on how long students have to complete the test. These instructors believe that if a student knows where to go in the text book to get the information they need in a timely fashion then that student has clearly done the reading, and the issue of memorizing the information is less important. Some online course software allows you to limit the time that students may view test questions and post test answers.
- Unlike many traditional classes where students never see their completed exams after they hand them in, students in online courses can usually go back and look at the exam questions at a later date. While this can be a useful learning tool for students, it can lead to additional questions from students about exam content or the wording of a question.

Encourage active learning:

- Help students become more reflective learners by asking them to set their goals for the course at the beginning of the semester. At the end of the course, ask them to return to their goals to reflect upon what they've accomplished.
- The majority of students focus their academic effort on those elements of the course that will affect their grade in the course. Be sure that your grading policies reinforce the activities and assignments you value and that you take advantage of learning activities that are particularly suited for an online course. For example, if you want students to meaningfully participate in online discussions, be sure to include participation as part of the grading scheme.

Evaluate participation in threaded discussions:

- Require students to participate in specific numbers of threaded discussions.
- Have interactive learning activities account for a high percentage of the course grade.
- Identify the qualities you look for in discussions and grade students according to those criteria.

ASSESSING WHETHER THE COURSE IS "WORKING"

Assessing whether your course is "working" provides feedback to understand what is useful to students. Josh Bersin in "Measuring E-Learning Effectiveness: A Five-Step Programme for Success" offers a helpful framework for thinking about the kinds of information you can use to determine your course's success. We also provide some specific assessment techniques.

Five Steps to Measure Effectiveness

- *Enrollment*: Is the audience showing up? If students are not enrolling in your course, then they might not know about the course or do not know how to enroll in the course. If the course is an elective course, the course may be named poorly or not located correctly in the catalog.
- *Activity*: Are they making progress? Typically, if the content is appropriate for the audience, students will progress at a reasonable rate. You may find that students move quickly and then stop at a particular point. Such information is valuable to help you assess the usability, relevance and performance of the course content.
  - *Tip*: Use minute papers or muddiest point exercises to provide feedback. Minute papers and muddiest point exercises work even better in an online environment because students can share them with each other, so students see what other students are thinking about.
- *Completion*: Did they finish? Students who truly complete the course can provide valuable feedback. However, many course software will "flag" a student "complete" even if that student has not completed all the course assignments. Make sure that you can accurately track which students have completed all the course work.
- *Scores*: How well did a student score? In online learning environments, you often can not gauge why a student has scored highly on a quiz or assignment. Did they really learn the material or copy from someone else? Multiple assessments will allow you measure incremental progress towards the final learning goal, so you can measure what exactly a student scored well on and where they have fallen short.
- *Feedback/Surveys*: Did they like it? Feedback is a vital part of online learning. Regular feedback will provide you important details about the course content, assessments, and technology.
  - *Tip*: Collect mid-semester feedback and alter the course according to student suggestions. ÿ Tip: Survey students at the end of class about their progress. What worked in the course and what didn't?

STRUCTURING AN ONLINE COURSE

- Course Planning
- Course Organization
- Communication

Experienced online instructors and students alike emphasize the need to have a clearly structured and well-planned course when teaching and learning online. Structuring the course effectively means planning the course well in advance of when it is being taught, thinking through the organizational structures and qualities that will help students learn, and understanding that the online environment presents a number of communication challenges.

Course Planning

Designing a course always takes a great deal of time and thought. That is no different with online courses. At the same time, the online environment offers particular obstacles and opportunities for both instructors and students. As you think through the course elements, pay particular attention to the course components that may serve as stumbling blocks to student learning online. One particular tension that emerges is the need to have a clear and organized structure, while allowing flexibility for making adaptations mid-stream.

- Develop your course before the semester begins: Often new faculty discover that developing online courses is time-consuming and that transitioning a successful traditional course to an online setting can be difficult. Experienced online instructors suggest developing your course well in advance and with a clear, concise objectives statement. The better prepared you are, the better your online teaching experience will be.
- Allow flexibility in your course design: Although it is important to make course expectations and due dates clear, it is also important to build in flexibility to your schedule. Building flexibility into your course structure will allow you to compensate for unexpected technological problems as well as give you opportunities to respond to student feedback.

Course Organization

Students in online courses are in particular need of a clear organizational structure. Keep in mind that each student is experiencing the course on his or her own - without the opportunity to turn immediately to a neighbour if confused or unclear about something in the course. In addition, students in online courses do not have the imposed structure of attending class at a consistent time and place each week they do not have the traditional "markers" of handing in papers in class or coming to the classroom to take a test. For all these reasons, it's important to think carefully about how to appropriately organize your course to encourage student participation and facilitate student learning.

- Chunk the syllabus into parts: Divide the course syllabus into discrete segments, organized by topic. Self-contained segments can be used to assess student mastery of that unit before moving forward in the course.
  - *Tip*: Use an "Assignments" page for course assignments. On that page, outline each assignment in a paragraph, explaining its purpose

in helping students, and provide explanations and guidelines for evaluation. The sample course homepage in this stage for an example of organizing your course this way.

– *Tip*: Another way to divide the course is by time. One instructor uses the following organization, in which each unit is labeled by week and author, for her literature course. The first two weeks of her course:
    a. Course Home
        1. Syllabus
        2. Calendar
        3. Lounge
        4. Questions
    a. *Week* 1: Kyoko Mori
        1. Who is Kyoko Mori?
        2. Reading Notes
        3. Weekly Exercise
        4. Journal
        5. Threaded Discussion
    a. *Week 2:* Esmeralda Santiago
        1. Who is Esmeralda Santiago?
        2. Reading Notes
        3. Weekly Exercise
        4. Journal
        5. Threaded Discussion

• Break assignments into chunks with "touch points": Because students work at their own pace in an online course, it works best to develop guidelines that require students to come back to the course website often. Chunking assignments helps students keep up with the work. In addition, use "touch points" at which point students do something–write in a journal, send an e-mail, enter into a discussion–to help chunk course content and give the course more structure.
    – *Tip*: A literature instructor chunked one unit as follows:
        a. *Assignments for their eyes were wathcing god*:
            1. *Background information*: Before you begin to read Their Eyes Were Watching God, please read the background information that I have provided.
            2. Read stages 1-10 and write a two-page, single-spaced reading response that you will put in your Journal on the course homepage journal link. This response will be more informal than an essay, and is due by midnight, July 23.
            3. Finish Reading the book and post at least twice to your group discussion board 8 p.m. July 25.
            4. Respond to your group discussion board several times© by noon, July 26.

- *Provide due dates for assignments:* Each assignment should have a clear due date and time. In addition, multiple due dates every week keep students on track with course requirements.
- *Provide multiple opportunities for graded activities*: Assess students on writing assignments, standard test formats, and class participation. The online course format offers a number of opportunities for graded written assignments, including threaded discussions, papers, web research, and online exercises. Multiple measurement points will stimulate students to become involved in multiple activities and keep them participating in class.
- *Give credit for participating in online discussions*: Give students credit for the substantive learning that students provide for each other through online discussions. In many online courses, these discussions are essential for advancing the course goals. By assigning credit for participation in online discussions, instructors can deter "lurking," where students listen to the conversation but do not participate.

Communication

In considering how you communicate with students about course goals and your expectations, it is again important to remember that students experience your course on their own and will come to the course with varying levels of technical expertise. Place important information in a variety of places, and repeat it often, in order to enhance the chances that students will pay attention to it.

- *Give students a clear overall understanding of the course structure*: Students need a clear message of the "vision" of the course so provide them a sense of the overall landscape of the course.
  - *Tip*: Use a Table of Contents layout design to help first time online students understand the structure of the course. The Table of Contents style is similar to printed material. The sample course homepage in this stage for an example of how to provide a sense of the overall landscape of a course.
- *Post course syllabus, policies, expectations, and objectives on the course website*: You will most likely not be available to respond immediately when students e-mail questions regarding assignments or due dates, so posting your syllabus on the course homepage will eliminate confusion.
  - *Tip*: Students will access the course homepage at any time of the day or night. You can't always be online to answer questions, so make the assignments easy to find and easy to understand.
- *Setup a housekeeping clearinghouse part on your webpage*: To cut down on the number of individual questions, set-up a housekeeping clearinghouse part on your webpage where students can post a question and get answers about general course information. Encourage students to go to this part of the course before asking the instructor.

- *Use printed materials if a student requests*: Have a printed workbook of course syllabus and other critical course information available for students who request printed copies.
  - *Tip*: For engineering courses with heavy math content, provide detailed lecture notes, solutions, and other course materials in PDF format before the lecture date or online access date. This will allow students to download and print course material in advance.
- *Structure online discussions*: Structure the course to capitalize on the threaded discussion format. Use existing textbook material or website readings for "lecture" and guide students through activities and threaded postings for active learning.
- *Remind students frequently of due dates*: Use a technique like "Nag Notes" to remind students of due dates and other requirements.
  - *Tip*: One Communication professor uses "nag notes" to remind his students of due dates. For example:
    a. I've posted the topics proposed thus far. Browse to projects/ paper No. 1. Reminders:
    b. For Wednesday, Read the Birkerts piece, "Into the Electronic Millennium."
    c. For Monday, Read Postman's and do the IT/HC in the News Discussion Forum assignment.

CREATING COMMUNITY

- Student-to-Student Interaction
- Faculty-to-Student Interaction
- Tone

In an environment where instructors do not necessarily meet students face-to-face and where students may never have an opportunity to meet their peers in a physical classroom, developing a sense of community can be particularly challenging. At the same time, a sense of a community–where students are able to work cooperatively with peers on course material, have the opportunity for positive interaction with the instructor, and where the learning environment is respectful and motivates students to do their best–is key to a positive and successful learning experience.

This part provides a number of solutions for creating community in the online classroom. The Online Fellows are quick to point out, however, that creating community is a challenge, and classroom dynamics must be monitored throughout the semester to ensure that students continue to engage thoughtfully in course content and continue to work together productively.

Student-to-Student Interaction

As the Principles of Good Practice in Undergraduate Education make clear, student learning in any classroom is enhanced when students have the opportunity

to connect with each other about their academic work. For the online instructor, facilitating student-to-student interaction is made particularly challenging because students do not naturally have a chance to get to know each other before class or in face-to-face conversations.

Therefore, it is important to structure opportunities where students "have" to interact with each other. It is also important, however, that the instructor develop methods for monitoring the success of these interactions.

The Online Fellows offer the following recommendations:

- *Limit the size of discussion groups*: Rather than having an entire class talk in one large group, break the class into smaller discussion groups of four or five students. That way, students can get to know each other in a more intimate way.
- *Allow students to post student-to-student communication to get answers to questions*: Encourage students to discuss among themselves. Do not respond to every comment-interject and guide the discussion. Encourage students to introduce themselves to the group at the beginning of the semester.
- *Pair each student with a "buddy" in the course*: The buddy system gives students a source of support in the online classroom. Some instructors match students with varying technological experience. Other instructors prefer to match students who possess similar technological skills. Pair students according to the goals of your course or the assignment.
- *Encourage peer response*: Post student papers online and ask each student to select a partner to critique each other's work. Be sure that students know their paper will be posted.
- *Structure opportunities for personal interaction*: Incorporate opportunities for students to tell you something about themselves in a "student lounge" or meeting place. A "student lounge" can also be a place where students can share with each other, meet each other virtually, and learn more about each other without your presence. The "Student Conference Centre" at the end of this stage for an example of how to set up such a location on your course website.

Faculty-to-student Interaction

The Principles of Good Practice highlight the importance of faculty-student interaction in promoting learning. The online environment is not necessarily conducive to this goal, because neither the instructor nor the student can rely on regular face-to-face interactions to reinforce one's willingness to be helpful and approachable.

Experienced online instructors, however, have identified the following ways to help enhance faculty-student interactions:

- *In your written communication, present yourself as accessible to students*: Students in an online course must feel that you are approachable. Often

the demands on teachers are greater in online courses, so it is important to explore the variety of ways you can send a message of availability. One way to bridge the distance between faculty and student is to address students by name. Praise student-initiated contact.

  - *Tip*: To make yourself seem approachable to students, try using a more informal tone. For example, "Today, as you all are well aware, our class officially begins. Please begin working on the assignments for July 15-21. You have a couple of assignments due tonight"

- *Schedule an in-person meeting of the entire class*: If possible, meet with students in person for one session at the beginning of the semester. Meeting in person helps students associate names with faces and can be an effective, timely way to accomplish many of the administrative tasks central to your course.
- *Generate frequent communication*: Students need to have a sense the instructor is really "there," not "missing in action." This means responding in a timely manner to individual questions or issues that are raised in discussion groups. It also means making your presence known by participating in online discussions, giving students regular feedback on their work and their comments, and being flexible enough to make changes to the course mid-stream based on student feedback.
- *Assign discussion group leaders or project team leaders to facilitate group work*: Assigning team leaders is one way to ensure that students receive ample feedback. Make sure that the team leader disseminates information to every member of the team. Part of the responsibility of the team leader should be to report to you frequently on the progress of the team.

Tone

Remember that in the virtual classroom, neither the instructor nor the student has the visual cues of face-to-face communication. This also means students have fewer methods for determining whether their efforts are comparable to those of their peers and for assessing how they are doing in the class.

Students will use the cues that are available to help them understand the classroom climate. Therefore, how the instructor shapes the course climate through written comments and the tone of communications to students is particularly important.

- *"Humanize" the course*: Remember that although you are teaching online, you are still teaching real people, so it helps if you and students can put names with faces. Develop a portion of the course website to post pictures and brief bios of students.
- *Avoid general broadcast questions*: An online course is not a collective but many individuals all reading messages separately. So, a broadcast message like "Are you doing the reading?" is hard for a student sitting at his/her own computer to interpret.

- *Consider the tone of your own responses to students*: Attitude comes through in writing. Are you sounding impatient? Supportive? Praise and model appropriate tone.
- *Use private e-mail for sensitive communications*: Use threaded discussions for group conversations. Use private e-mails to comment on individual student contributions and criticism.

ADVANTAGES OF TEACHING ONLINE

Teaching online courses can:

- *Offer the opportunity to think about teaching in new ways*: Online teaching can allow you to experiment with techniques only available in online environments, such as threaded discussions and webliographies.
- *Provide ideas and techniques to implement in traditional courses*: Online e-mail discussions, a frequently-used practice in online learning, can be incorporated into traditional courses to facilitate group work. Other techniques, such as web-based course calendars and sample papers posted on the Internet can easily be incorporated into a traditional course.
- *Expand the reach of the curriculum*: Online teaching can expand existing curriculum to students on a regional, national, and international level.
- *Professional satisfaction*: Teaching online can be an enormously rewarding experience for teachers. Teachers often cite the diversity of students in online courses as one of the most rewarding aspects of teaching online.
- *Instructor convenience*: Teaching online can offer teachers conveniences not available in traditional classroom settings; for example, at-home office hours and flexible work schedules.

DIGITAL LEARNING OBJECTS

Interest in digital learning objects is directly related to the growth of e-learning. Digital learning objects are like books, journal articles and other types of learning and teaching resources that may be found on the shelves of libraries and bookshops. However, unlike most books and journal articles that are found in libraries and bookshops, digital learning objects are stored only in electronic form, hence its association with e-learning. Digital learning objects may include anything from a set of learning outcomes, learning designs or whole courses to multimedia and other forms of resources, as long as they are kept in electronic from. Like books and journal articles, digital learning objects are catalogued and stored in learning object repositories so that they can be easily identified, searched and reused. While standards and conventions for cataloguing books and journals are widely known and adopted, the standards for cataloguing digital learning objects are still in the early stages of their development.

WHAT IS A LEARNING OBJECT

A "learning object" is any item that has the potential to promote learning. As such, a printed book, a journal article, or a newspaper report is a learning object. The term "learning object" is derived from object oriented programming where items of potential educational use are seen as "objects". An object in this context is generally understood as an amalgamation of related variables and methods. Therefore, an object that can promote learning and teaching is seen as a "learning object". A key attribute of learning objects is their discrete nature. Their discreteness enables learning objects to be categorized and stored independently, and reused in a range of educational settings.

Developers of learning objects have used a range of descriptors to capture their discrete character. Some of these descriptors include molecular, organic or granular structure, LEGO or Lincoln Logs. Like any other real-world object such as a car, house or a boat, a learning object will have a commonly recognizable state and behaviour. A car, for instance, will have a name, make or model, and a definition of its engine power and performance in particular settings. In the same way, a learning object can have descriptors of its state and behaviour. Describing and labeling learning objects accordingly will enable them to be easily and accurately identified for reuse by multiple users and in a range of educational settings. This is exactly what cataloguing systems such as the Library of Congress Classification System, and referencing conventions such as the American Psychological Association Publications Style aim to accomplish.

WHAT IS A DIGITAL LEARNING OBJECT

A "digital learning object" is any electronic resource that has the potential to promote learning. Typically these include scripts, images, and multimedia modules etc in digital format. They are often developed as discrete entities so that they can be reused by multiple users and in a range of educational settings. Since the development of digital learning materials is an extremely time-consuming and expensive undertaking, the assumption is that once developed, they ought to be able to be used, reused and shared by a large number of people and in a wide range of settings.

CHARACTERISTICS OF LEARNING OBJECTS

Apart from being discrete entities, learning objects are identifiable by several other notable features. For instance, learning objects must necessarily be able to be easily transported, and reused in a variety of educational settings, otherwise there isn't much point in developing these as discrete entities. They must also be interoperable in a range of educational environments otherwise their potential for reuse is compromised, which will clearly impact their value and use. Moreover, as interest in learning objects grows, there is likely to be a wide variety of learning objects that are developed, just as there are a wide variety of other types of learning resources that can be found in bookshops and libraries.

Some of these learning objects will comprise just the content item. However, others will comprise much more than the content including expected learning outcomes, assessment items to ascertain if these learning outcomes have been achieved as well as metadata on the object. There will also be a wide variety of learning objects that will be developed. These would include learning objects that are factual, procedural, principle-based, and conceptual.

With increasingly more detail being added to learning objects, they are likely to become more context-bound rather remain more context-independent. Moreover, as the focus on the instructional role of learning objects intensifies, there is serious danger that learning objects will begin to drive pedagogical practices rather than pedagogy driving the use of the learning resources. There is already talk of pedagogy in advance of learning objects. Developers of learning objects will need to be aware of the advantages and disadvantages of this trade-off between context-dependence and context-independence of learning objects and the implications for their use and interoperability.

PURPOSE AND MISCONCEPTIONS

It is widely acknowledged that digital learning objects are developed to promote learning and teaching. It has also been suggested that "the future of learning is inextricably linked to the development of quality learning objects". While there is no doubt that learning can benefit from good quality learning resource materials, high quality learning is the result of many more factors than learning objects or resources. The factors that influence learning include learner readiness, their interest and motivation in the study of the subject matter, the nature and quality of the learning experience including the nature of the assessment activities, and the nature and quality of feedback and support that is available to students. Hence it seems unwise to suggest that learning objects are going to determine the future of learning. Just as best selling books have not necessarily improved the quality of learning, there is no reason to assume that learning objects are going to significantly impact the quality of learning.

IDENTIFYING AND DEFINING DIGITAL LEARNING OBJECTS WITH METADATA

In order for digital learning objects to be easily identified and located by users, they have to be uniformly and systematically defined with metadata. Metadata is data about data. They are similar in type and serve the same purpose that is served by data that is found on library catalogue cards about the state and behaviour of various resource items in a consistent format. Work on the development of learning object metadata standards has been led by the Institute of Electrical and Electronics Engineers Learning Object Metadata standards committees.

The metadata standards that have been developed by IEEE LOM standards committees have been refined and simplified by various groups including CanCore. Other similar best practice guidelines include the Dublin Core Usage

Guide, the CIMI Guide to best practice, and the online Archive of California Best Practices Guidelines. While work on the development of standards for learning object metadata continues, some concerns have been expressed about the nature and direction of this work.

Some of these concerns include:

- The relationship of best practice guidelines to the development of tools for the creation of metadata. It is suggested that these tools must be developed so that they are able to be adapted to meet the requirements of particular user groups and specific implementations.
- Partial automation of the creation of metadata. As tools for the creation of metadata are being developed, it is suggested that many of these processes can be automated via content creation tools.
- End-users need not be directly exposed to many of the structures of Learning Object Metadata. The suggestion is that it is not advisable to present less skilled end-users with all the elements for the creation of metadata.
- Learning object metadata does not offer any provisions for version control or digital rights management. Learning object metadata has elements that address some of these concerns, but these are insufficient for a proper management of issues related to intellectual property.

PROCESSES OF PACKAGING, STORING AND DISTRIBUTING DIGITAL LEARNING OBJECTS

Digital learning objects, once they have been appropriately classified and labeled with metadata, are best stored in learning object repositories which can enable them to be easily located, shared and reused in a variety of educational settings. Digital learning object repositories are "the libraries of the e-learning era". When made available in such repositories, digital learning objects are also open to peerreview and scrutiny which in-turn is useful for the improvement of their quality.

It is unlikely, however, that a single repository will be able to house in one place all digital learning resources, just as no one library stores all the books in one location, or no one publisher publishes and distributes all the books. Digital learning objects can be stored and made available to users in a range of ways and from a variety of locations. Therefore, it makes sense to have a "distributed" model of learning object repositories which uses network communications technologies to distribute and share digital learning objects among repositories. These authors also suggest that a successful digital learning object repository is one that promotes the sharing of records along with being able to facilitate access to the learning objects. Like specialist libraries, there might be learning object repositories which will specialize in housing particular types or genre of resources.

Useful specialist repositories might be those that might house only "experiencebased learning designs" or assessment strategies that are congruent

with constructivist or collaborative learning designs. Moreover, like different libraries, these repositories may also offer different, and a wide range of services to its users. A number of initiatives in the development of digital learning object repositories that demonstrate a distributed repository architecture have been described by Richards, Hatala and McGreal. These include POOL, POND and SPLASH. Other efforts in building learning object repositories include MERLOT, CAREO, and a growing list of Learning Content Management Systems - LCMSs.

IMPLICATIONS OF AN "EDUCATIONAL OBJECT ECONOMY"

With the growth in e-learning and online learning, there is sure to be increasing interest in the development, storage, and distribution of digital learning objects. Proponents of e-learning and online learning are certain and very clear about the central role that digital learning objects and repositories will play in such educational settings. Some claim that "the future of learning is inextricably linked to the development of quality learning objects", others see digital learning objects as the "building blocks of elearning", and learning object repositories as the "libraries of the e-learning era" with the potential to "fuel e-learning as the stock exchanges fuelled the industrial era". There are some others who are not as enthusiastic or convinced about an educational economy that is founded on the promise of digital learning objects–at least not just yet. However, these are still early days in the development, cataloguing, storing and sharing of digital learning objects. While digital learning repositories anxiously await for a critical mass of learning objects to be developed, there is no doubt that the currently limited pool of resources will grow. The standards for cataloguing digital learning objects with metadata are still evolving.

There are many problems in current practices with the lack of clarity and consistency in the definition of various attributes of learning objects such as in their level of interactivity and their context. There are also unresolved issues with the location and opportunities for viewing suitable items from a digital learning repository as is possible in libraries. A critical issue in the development, storage and sharing of digital learning objects is related to how academics and developers of such material view academic work and intellectual property issues related to it.

Traditionally academic output in the form of publications has been handled by commercial publishers just as to longstanding publication and distribution practices. However, conventions in relation to the production, distribution and sale of digital learning objects are still unclear and emerging. For instance, there are concerns about the rewards to academics and developers for developing learning objects and sharing these across repositories. Making them freely available in repositories is not necessarily in the best interest of academics. A key promise of digital learning objects and its availability across repositories is the opportunity for benefiting from sharing and reusing resources that are expensive and time-consuming to produce.

While this sounds like a laudable concept, it has been suggested that not all content developers are likely to be as enthusiastic about making available their learning and teaching content on repositories without appropriate rewards and safeguards against its use and adaptation. Moreover, not all learning objects may be able to be used as is in different educational settings. This means that there will be a tendency for users to modify and adapt the original version for their use.

Naturally this would require the consent of the original owner and developer of the learning resource. Furthermore, once a digital learning resource is modified, there will be issues relating to the ownership of the revised version and how the original work should be acknowledged. Clearly without appropriate digital learning objects rights management conventions, such issues and concerns will hinder progress on the sharing of digital learning objects across learning object repositories.

ASSESSING LEADER IDENTITY OF TEACHERS

As discussed previously, the identity one has as a leader is likely to be considered in the context of a specific role. The leadership role could involve leading one's life or being a classroom teacher. Regardless of the conditions in which the leading is taking place, the context should be considered when assessing levels of leader identity.

Thus, in our consideration of teachers' internalization and expression of the leader identity attributes, we chose to use contexts from classroom teaching. For example, when considering teacher engagement in self-regulation, the consideration might be classroom situations that require high levels of self-control, such as working around classroom interruptions or interacting with a disrespectful student. We would expect a teacher with a well-developed leader identity to navigate these situations as a leader by minimizing the influence of the interruption and moving forward with instruction or defusing the disrespectful student using a non-confrontational or other leader-based approaches.

As an individual develops a leader identity, there are various attributes that they express in the context of leadership. These attributes include self-regulation, self-efficacy, self-determination, implementation intentions, and grit. Expression of these attributes by teachers may provide evidence that they are acting and thinking like leaders, regardless of their identification as leaders.

Self-Regulation and Teachers Leading

Self-regulation in leading involves the process of controlling emotions, thoughts, preferences, desires, and attention, in efforts to maximize effectiveness.

The leadership attribute self-regulation in the context of teaching might be associated with controlling emotions when frustrated, adjusting the desire to move forward with instruction when students have not mastered the necessary prerequisite content, or limiting assumptions about under-performing students.

Based on our premise that teaching is a leadership role, there is justification for examining teacher engagement in self-regulation in the context of teaching, to assess their leader identity.

Self-Efficacy and Teachers Leading

Self-efficacy is "beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations". Murphy and Johnson argue self-efficacy is critical for identifying as a leader, by recognizing the potential for beliefs in one's ability to fulfill the responsibilities of a leader. Murphy and Ensher claim that leader self-efficacy (alternatively—leader efficacy) is an estimate of the leader's ability to complete a leadership task. For teachers, self-efficacy for leading may be an estimate of their ability to create and maintain positive learning climates in classes, a goal that requires the application of well-developed leadership skills.

A gap in the literature is in the leadership self-efficacy of teachers. Scholars have not researched (or recognized) the leader self-efficacy of teachers, yet teachers engage in leadership roles as they lead their students in learning. Scholars of teacher self-efficacy have researched teaching a particular subject, classroom management and discipline, student engagement using technology in the classroom, and interpersonal relations with students. While the existing studies of teacher self-efficacy do not include leadership, the research provides models for assessing self-efficacy in different contexts of teaching.

Bandura argues self-efficacy is situational and domain-dependent and, therefore, measures of self-efficacy should be constructed in alignment with the audience and task. When assessing the leader identity of teachers, it is critical to evaluate their leadership self-efficacy using the context of teaching and tasks that require leadership. The association between self-efficacy and leader identity justifies including self-efficacy for leading as a critical attribute of the leader identity of teachers.

Self-Determination and Teachers Leading

Ryan and Deci define self-determination as an empirically based theory of human motivation, development, and wellness. Self-determination in leadership is expressed when making decisions and engaging in the associated activities to achieve professional goals. A teacher with a leader identity may express the attribute of self-determination as the motivation to try new instructional approaches in situations of unknown outcomes.

Much research on self-determination in educational settings has focused on teacher influence on student development of self-determination, rather than teacher expression of the construct. Taylor and Ntoumanis assessed teachers' level of self-determination, but with respect to their influence on students and not in relation to their leader identity. Although teacher self-determination plays a significant role in classroom teaching and in leadership, there is scant research on associated with the leader identity of teachers. Due to the importance and

the lack of research on teacher engagement in the leader identity attribute of self-determination in the context of teaching, there is justification for considering self-determination as a critical attribute of the leader identity of teachers.

Implementation Intentions and Teachers Leading

Gollwitzer and Sheeran define implementation intentions as desires or visions of the actions needed to achieve goals or shield goals from distractions. Implementation intentions is an attribute of leader identity as leadership requires planning and setting goals.

We consider implementation intentions in the context of teaching as leading to be the desire, willingness, and commitment to take actions to facilitate student learning. Implementation intentions are critical for teachers' success as they plan for student learning, work to help students meet learning objectives, and support student learning progression. We were unable to locate any empirical reports documenting the implementation intentions of teachers associated with their leader identity in the context of their classroom teaching. Because of the importance of implementation intentions to effective leadership, teaching, and identifying as a leader, there is justification for assessing the attribute when documenting the leader identity of teachers.

Grit and Teachers Leading

Grit is defined as the "perseverance and passion for long term goals". Individuals with a high level of grit are more likely to succeed. Grit has been documented to be as crucial to success as talent and intelligence. Davidson found an association between leadership behaviours and grit, validating the relationship between leadership and grit. Schimschal and Lomas report grit as accounting for variance in positive leadership. The association between grit and leadership activities suggests grit is likely an essential attribute associated with leader identity.

Grit has also been found to be a significant predictor of teacher effectiveness. Gritty teachers successfully sustain their careers because they can persevere through the many challenges of teaching. We recognize that teachers may have grit but lack a leader identity, but it would be doubtful for teachers to identify as leaders and not have grit. Because of the association between grit and effective leadership, there is justification for including grit in the assessment of the leader identity of teachers.

7

Principles for Constructing Curriculum

CURRICULUM

In formal education, a curriculum is the set of courses, and their content, offered at a school or university. As an idea, curriculum stems from the Latin word for *race course*, referring to the course of deeds and experiences through which children grow to become mature adults. A curriculum is prescriptive, and is based on a more general syllabus which merely specifies what topics must be understood and to what level to achieve a particular grade or standard-

HISTORICAL CONCEPTION

In *The Curriculum*, the first textbook published on the subject, in 1918, John Franklin Bobbitt said that curriculum, as an idea, has its roots in the Latin word for *race-course*, explaining the curriculum as the course of deeds and experiences through which children become the adults they should be, *for success in adult society*. Furthermore, the curriculum encompasses the entire scope of formative deed and experience occurring in and out of school, and not only experiences occurring in school; experiences that are unplanned and undirected, and experiences intentionally directed for the purposeful formation of adult members of society. To Bobbitt, the curriculum is a social engineering arena. Per his cultural presumptions and social definitions, his curricular formulation has two notable features: (i) that scientific experts would best be qualified to and justified in designing curricula based upon their expert knowledge of what qualities are

desirable in adult members of society, and which experiences would generate said qualities; and (ii) curriculum defined as the deeds-experiences the student *ought to have* to become the adult he or she *ought to become*.

Hence, he defined the curriculum as an ideal, rather than as the concrete reality of the deeds and experiences that form people to who and what they are.

Contemporary views of curriculum reject these features of Bobbitt's postulates, but retain the basis of curriculum as the course of experience(s) that forms human beings into persons. Personal formation via curricula is studied at the personal level and at the group level, *i.e.*, cultures and societies (*e.g.*, professional formation, academic discipline via historical experience). The formation of a group is reciprocal, with the formation of its individual participants.

Although it formally appeared in Bobbitt's definition, curriculum as a course of formative experience also pervades John Dewey's work (who disagreed with Bobbitt on important matters). Although Bobbitt's and Dewey's idealistic understanding of "curriculum" is different from current, restricted uses of the word, curriculum writers and researchers generally share it as common, substantive understanding of curriculum.

CURRICULUM IN FORMAL SCHOOLING

In formal education or schooling (cf. education), a curriculum is the set of courses, course work, and content offered at a school or university. A curriculum may be partly or entirely determined by an external, authoritative body (*i.e.*, the National Curriculum for England in English schools). In the U.S., each state, with the individual school districts, establishes the curricula taught. Each state, however, builds its curriculum with great participation of national academic subject groups selected by the United States Department of Education, *e.g.*, National Council of Teachers of Mathematics (NCTM) for mathematical instruction.

In Australia each state's Education Department establishes curricula with plans for a National Curriculum in 2011. UNESCO's International Bureau of Education has the primary mission of studying curricula and their implementation worldwide.

Curriculum means two things: (i) the range of courses from which students choose what subject matters to study, and (ii) a specific learning programme. In the latter case, the curriculum collectively describes the teaching, learning, and assessment materials available for a given course of study.

Currently, a *spiral curriculum* (or *tycoil curriculum*) is promoted as allowing students to revisit a subject matter's content at the different levels of development of the subject matter being studied. The constructivist approach, of the *tycoil curriculum*, proposes that children learn best via active engagement with the educational environment, *i.e.*, discovery learning.

Crucial to the curriculum is the definition of the course objectives that usually are expressed as *learning outcomes'* and normally include the program's

assessment strategy. These outcomes and assessments are grouped as units (or modules), and, therefore, the curriculum comprises a collection of such units, each, in turn, comprising a specialised, specific part of the curriculum. So, a typical curriculum includes communications, numeracy, information technology, and social skills units, with specific, specialized teaching of each.

Core curriculum has typically been highly emphasized in Soviet and Russian universities and technical institutes. In this photo, a student has come to the university's main class schedule board on the first day of classes to find what classes he – and all students in his specialization (sub-major) – will attend this semester.

CURRICULUM TYPES IN THE UNITED STATES

Many educational institutions are currently trying to balance two opposing forces. On the one hand, some believe students should have a common knowledge foundation, often in the form of a core curriculum; on the other hand, others want students to be able to pursue their own educational interests, often through early specialty in a major, however, other times through the free choice of courses.

This tension has received a large amount of coverage due to Harvard University's reorganization of its core requirements. An essential feature of curriculum design, seen in every college catalog and at every other level of schooling, is the identification of prerequisites for each course.

These prerequisites can be satisfied by taking particular courses, and in some cases by examination, or by other means, such as work experience. In general, more advanced courses in any subject require some foundation in basic courses, but some coursework requires study in other departments, as in the sequence of math classes required for a physics major, or the language requirements for students preparing in literature, music, or scientific research.

A more detailed curriculum design must deal with prerequisites within a course for each topic taken up. This in turn leads to the problems of course organization and scheduling once the dependencies between topics are known.

CORE CURRICULUM

In education, a core curriculum is a curriculum, or course of study, which is deemed central and usually made mandatory for all students of a school or school system.

However, this is not always the case. For example, a school might mandate a music appreciation class, but students may opt out if they take a performing musical class, such as orchestra, band, chorus, *etc.* Core curricula are often instituted, at the primary and secondary levels, by school boards, Departments of Education, or other administrative agencies charged with overseeing education. At the undergraduate level, individual college and university administrations and faculties sometimes mandate core curricula, especially in the liberal arts. But because of increasing specialization and depth in the student's major field of study, a typical

core curriculum in higher education mandates a far smaller proportion of a student's course work than a high school or elementary school core curriculum prescribes.

Amongst the best known and most expansive core curricula programmes at leading American colleges are that of Columbia College at Columbia University, as well as the University of Chicago's.

Both can take up to two years to complete without advanced standing, and are designed to foster critical skills in a broad range of academic disciplines, including: the social sciences, humanities, physical and biological sciences, mathematics, writing and foreign languages.

In 1999, the University of Chicago announced plans to reduce and modify the content of its core curriculum, including lowering the number of required courses from 21 to 15 and offering a wider range of content. When *The New York Times*, *The Economist*, and other major news outlets picked up this story, the University became the focal point of a national debate on education. The National Association of Scholars released a statement saying, "*It is truly depressing to observe a steady abandonment of the University of Chicago's once imposing undergraduate core curriculum, which for so long stood as the benchmark of content and rigour among American academic institutions.*"

Simultaneously, however, a set of university administrators, notably then-President Hugo Sonnenschein, argued that reducing the core curriculum had become both a financial and educational imperative, as the university was struggling to attract a commensurate volume of applicants to its undergraduate division compared to peer schools as a result of what was perceived by the pro-change camp as a reaction by "the average eighteen year old" to the expanse of the collegiate core.

Further, as core curricula began to be diminished over the course of the twentieth century at many American schools, several smaller institutions became famous for embracing a core curriculum that covers nearly the student's entire undergraduate education, often utilizing classic texts of the western canon to teach all subjects including science. St. John's College in the United States is one example of this approach.

DISTRIBUTION REQUIREMENTS

Some colleges opt for the middle ground of the continuum between specified and unspecified curricula by using a system of distribution requirements. In such a system, students are required to take courses in particular categories, but are free to choose within these categories.

OPEN CURRICULUM

Other institutions have largely done away with core requirements in their entirety, as in the student-driven course selections of Brown University and Cornell University. Amherst College requires that students take one of a list of first-year seminars, but has no required classes or distribution requirements.

CURRICULUM ORGANISATION AND STRUCTURE

The curriculum is delivered through modules which are defined as 'elements' of learning. Each module has specified learning outcomes and associated assessment criteria. The course that you are studying will be made up of modules that together make up the named award for which you are enrolled.

Most courses will include:

- Mandatory modules (also known as core modules on some programmes) are modules that are required to be passed for the award)
- Elective modules (also known as designate modules on some programmes) are choices from a prescribed list(s) of modules.
- Option modules are options you can choose beyond elective or designate modules.

For some courses there is a formal prerequisite relationship between modules, requiring award of credit for the one module before enrolling on a linked follow up module.

Individual modules for undergraduate study are in multiples of ten credit points and are set at a specified level. Level 3 is equivalent to foundation undergraduate study (this was previously level 0), level 4 to basic/introductory undergraduate study (this was previously level 1), level 5 to intermediate undergraduate study (which was previously level 2) and level 6 to final/advanced undergraduate study (which was previously level 3). Successful completion of a module and being awarded credit at the specified level is accumulated towards a specific award.

A full-time student will normally undertake modules to a value of 120 credits in one year 60 credits per semester. A part-time student may have more flexibility and may often be able to negotiate the amount of credit taken per year, but on average this would normally be 60-80 credits per year. A student taking more than 80 credits in any academic year would normally be classified as full-time.

On this basis a full-time student could achieve a degree award in three years (not counting any major sandwich placements) and a part-time student in five to six years.

Individual modules for post-graduate study are in multiples of 5 credit points, with a minimum of five credit points and, normally, a maximum value of 60 credits. Modules of 60 credits are normally only used for a dissertation/research project. Taught modules are normally not more than 30 credits. Each module successfully completed earns you credit at Masters level which is accumulated towards a specific award.

On a full-time basis a student would normally achieve a post-graduate diploma in two semesters, at 60 credits per semester, with a further three months normally required for the final Masters stage. A part-time student may negotiate the amount of credit taken per year, but on average this would normally be 60 credits per year. On this basis a full-time student could achieve a Masters award in one calendar year and a part-time student in three years.

Students may negotiate the completion of a programme of study by a mixture of full-time and part-time study to do this you would need to see your Programme Leader to agree a programme of study that is appropriate to your needs.

WHY INTEGRATE?

Educators are motivated to foster curriculum integration for both academic and ideological reasons. Such integration offers several potential academic benefits:

(1) Curriculum integration fosters the ongoing reinforcement of skills and information learned in one area of study when utilized in another area.
(2) Curriculum integration provides students a richer academic experience by broadening the context and applicability of information and skills that are learned.
(3) Curriculum integration maximizes the utilization of learning time by "borrowing" from one area to support another. This is particularly important in Jewish day schools where educators face time pressures in all curricular areas.

On an ideological level, curriculum integration helps to create holistic students who are able to see the relevance of their Judaism in all areas of their lives. This prevents compartmentalization in which students separate between the religious and secular aspects of their lives. Such separation can lead to competition between the two worlds, with the Jewish component often losing out.

WHAT IS INTEGRATION?

We might find valuable insights into the issue of curriculum integration in the literature in general education. A common misconception among Jewish educators is that curriculum integration by definition involves interdisciplinary study. Fogarty (1991) identifies ten models of integration that fall into three general categories: 1) integration within single disciplines, 2) integration across several disciplines, and 3) integration within and across learners. She defines the goal of integration as follows: "to help young minds discover roots running underground whereby contrary and remote things cohere and flower out from one stem."

As such, integration represents a way of thinking rather than simply an overlapping of curriculum. Perkins and Salomon (1984) utilize the term "transfer" to describe this way of thinking. They distinguish between "learning" and "transfer". "Learning" is characterized by the ability of the student to demonstrate performance in a context that is more or less the same as the learning situation. "Transfer" takes place when the student is able to apply knowledge acquired to different situations.

A classical example of learning without transfer is often seen in Hebrew language instruction. Parents often wonder how their children could have received good grades in Hebrew language for 12 years and still be unable to function in a Hebrew-speaking society. In all likelihood, the children's instruction and assessment remained within the context of the classroom. As a result, they are unable to transfer their knowledge of Hebrew to other contexts.

The following three exercises represent different levels of learning and transfer for children who are learning multiplication tables in the study of mathematics:

(1) 6 x 8 =
(2) If an apple costs 8 cents, how much would it cost to buy 6 apples?
(3) How far would a car travelling 60 miles per hour travel in 8 hours?

The child who can only answer the first question has learned the material, but has not demonstrated transfer. The student who is able to answer the second question demonstrates a certain level of transfer. Mastery of the third question reflects an even greater degree of transfer.

As this example illustrates, the levels of transfer achieved in given learning situations can vary. Perkins and Saloman (1984) have identified two typologies of transfer, "low road transfer" and "high road transfer". Low road transfer involves spontaneous, automatic transfer of highly practiced skills with little need for reflective thinking. High road transfer involves an explicit formulation of abstraction in one situation that enables making a connection to another context. These authors make a further distinction in high road transfer between "forward reaching transfer" and "backward reaching transfer". In forward reaching transfer, abstractions are formulated in the initial learning that allows for future application. In backward reaching transfer, students formulate an abstraction guiding their reaching back to past experience for relevant connections.

With this model in mind, we can better understand Fogarty's assertion that integration can take place within one discipline. For example, Talmud study by itself provides an excellent opportunity for promoting high road transfer. The Gemara often gives the student a dispute in a legal case and then tries to abstract the principle behind the dispute. Theories are tested by application to other cases. Similarly, in geography, the student may be encouraged to apply concepts from the study of the development of a city in ancient times to the study of a more modern city. Conversely, our understanding of the concept of transfer can also help to explain the failure of many attempts at interdisciplinary integration. Simply reading The Giving Tree or studying a science unit on trees in conjunction with Tu Bishvat does not ensure that high road transfer takes place. As Brophy and Alleman (1991) assert, "An activity is appropriate because it promotes progress towards significant educational goals, not merely because it cuts across subject-matter lines."

CAN INTEGRATION BE TAUGHT?

According to Perkins and Salomon (1984), teachers can foster or hinder transfer in their instruction. A focus on content oriented questions and analysis tends to thwart the process of transfer. Transfer, however, can be encouraged through processes that the authors (1988) refer to as "hugging" and "bridging". Hugging is a method of fostering low road transfer. In hugging, teachers present material in a manner that creates resemblance conditions leading to a similarity

of context. Thus, if teachers wants students to transfer concepts learned in biology to ecology, they will frame the ecology lesson in a way that accents the contextual similarity. Bridging is a technique that encourages high road transfer. In bridging, the teacher mediates the desired processes of abstraction and connection making. For example, a social studies teacher might ask students what factors provoked World War I and where such factors are now operating in the world. Perkins and Salomon (1988) contend that these methods can do much to foster transfer in the instructional setting when used persistently and systematically.

IS INTERDISCIPLINARY INTEGRATION DESIRABLE?

There are those who question whether it is, in fact, advisable to engage in interdisciplinary integration in our schools. From a Jewish perspective, we find a hesitancy, even among those who advocate the concept of Torah Umada, the integration of Torah and general studies.

In his address to alumni of Yeshiva University on the school's fiftieth anniversary, Dr. Norman Lamm, president of the university, quoted his predecessor, Dr. Samuel Belkin: "Our job is to give the students the material; their job is to let the materials interact within their minds." Apparently, the bastion of the Torah Umada philosophy advocates a student-based integration facilitated by the presentation of parallel tracks without mediation. Interestingly, Howard Gardner has also expressed reservations about interdisciplinary instruction (Gardner, 1999).

To use the word interdisciplinary, one must show that particular disciplines have been mastered and appropriately joined. Such interdisciplinary synthesis is simply not feasible for most youngsters during the middle years of childhood, or for most of their teachers. Rather, I see most so-called interdisciplinary curricula as commonsense or proto-disciplinary activities. Instead of drawing on or preparing disciplined thinking, these approaches tend to ignore the pre-or proto-disciplinary distinctions that young children are becoming able to master.

While Gardner does not negate that "interdisciplinary" curricula may have some other value, he does assert that, at least prior to high school, they do not promote interdisciplinary thinking, and may in fact ultimately hamper such thinking by weakening mastery of specific disciplines. Gardner states a further reservation regarding the inability of many teachers to actually facilitate interdisciplinary study. These comments might be construed to support the compartmentalized approach reflected at Yeshiva University and many day schools. They could also be used to support the use of student based integration models that fall into Fogarty's third category, "integration within and across learners".

Yet, Bieler suggests that integrating Jewish and general studies may have another important goal. He quotes Heilman's assertion that compartmentalization often entails not only separation, but also devaluation of at least one of the elements being kept apart from the other (Heilman, 1978). If so, then departmentalization in the day school will often lead to the devaluation of either

the Jewish studies component or the general studies component, undermining the goal of creating students with integrated world views who can live holistically as Jews in the modern world. On the contrary, Bieler claims that such departmentalization creates a dissonance for learners that may lead to an active or passive disregard of one of the two worlds in which the school wants them to live. Thus, schools that wish to foster integrated world views must seek ways of overcoming compartmentalization within the given limitations.

THE RELATIONSHIP BETWEEN CURRICULUM AND INSTRUCTION

Instruction is the creation and implementation of purposefully developed plans for the teaching of curriculum content. It is what teachers often concisely refer to as "planning" and "teaching." The relationship between curriculum and instruction is so intimate that "curriculum and instruction" is frequently spoken as if it were one word (perhaps we should refer to it as "curstruction" or "instriculum"). With curriculum being the content of what is taught along with an overall process of how that content is to be taught, and instruction being the more detailed plans and the way those plans are implemented in order to teach the curriculum content, it becomes easy to understand that the two must be compatible in order to maximize student learning.

The case of multiage classrooms illustrates this close tie that exists between curriculum and instruction. Currently the most common classroom structure in American elementary schools is the single-grade classroom. This structure is meant to make instruction more efficient, allowing students of the same age to move through curriculum content at the same pace. In these classrooms the most prevalent teaching method is whole-class direct instruction. Because of the dominance of this structure nation-wide, commercially available curriculum and state learning standards are designed to be implemented in this type of learning environment. Some educators in their efforts to improve education have switched from a single-grade classroom structure to a multiage one. The multiage structure purposefully places students of different ages together in the same classroom while supporting an individualized continuous progress instructional model.

While changing the structure of the classroom, multiage educators also change the instructional methods they use in order to better match the needs of their diverse group of students.

They have found that "(c)urriculum designed for use in single-grade classrooms is not always adaptable to environments in which whole-class direct instruction is not the norm. Allowing for flexible groupings, academic diversity, and individual pacing are needs that are central to multiage practices" (Yates, Curriculum in Multiage Learning Environments, 2000). The instructional methods used by these teachers necessitate that curriculum be organized in a compatible manner.

THE BASES FOR CURRICULUM PLANNING

When planning for curriculum improvement, two categories of bases should be understood, those that are institutional in nature and those that affect people directly. The institutional bases for curriculum planning include planning domains, the context or characteristics of the school situation, the impact of current trends and issues, and the use of strategic planning. Those bases of curriculum planning that affect people directly include student and teacher needs, local curriculum problems to be addressed, competencies of the planners, and pressures from inside and outside the school (Doll, 1996 p362-378). All of these bases affect the curriculum planning process in various ways and to differing degrees. They can also vary with each situation over time.

As of this writing, a current educational issue in the United States is that of student performance and preparation for the workplace. The trend is for state governments to create standards of competence that are tested at various points in students' educational careers and to make schools and students accountable for their performance on these tests. Test scores are frequently reported in the local media and this may lead to pressure from the local population being brought to bear on the school to improve its curricula.

The context of the school may be that it is within a district that hasn't passed a school levy for a number of years and thus has not been able to budget money to work on improving the curricula during that time. This not-uncommon scenario shows how a combination of factors can become the bases for, and can influence the curriculum planning process.

CRITERIA TO PLAN, DEVELOP, AND IMPLEMENT CURRICULA

Ronald Doll lists eleven principles of decision making and process as it relates to the evaluation of curricula and projects. These principles form the criteria of a quality curriculum development process that includes the stages of planning, development, and implementation.

Curriculum decisions should be made:

1. For valid educational reasons.
2. On the basis of the best available evidence.
3. In a context of broadly conceived aims of education
4. Within a context of previously made decisions and of needs for additional decision making so that balance and other important curriculum considerations may be safeguarded.
5. By achieving a resolution of forces originating in the nature and development of learners, the nature of learning processes, demands of the society at large, requirements of the local community, and the nature and structure of subject matter to be learned.
6. Cooperatively by persons who are legitimately involved in the effects of the decisions.
7. Taking into account new facts of human life such as the proliferation of knowledge and a need for a new sense of unity within our diversity.

8. Taking into account the many differences among learners.
9. With a realistic view of certain organizational or engineering matters that can affect the quality of the decisions themselves.
10. With some forethought about ways in which they may be communicated and shared.
11. Only with reference to subject matter and pupil experiences that cannot be offered as satisfactorily outside the school (Doll, 1996 p293-296).

HOW VALUES CAN INFLUENCE CURRICULUM PLANNING

Social forces that can influence curriculum planning come from far and wide. The ideas and values of various groups of people may include their social goals, ideas about cultural uniformity and diversity, social pressures, ideas about social change, their plans for the future, and their concepts of culture (Coutts, 1999). An example of this can be seen when contrasting the *CYFERNet* and the *Catalyst: Voices of Chicago School Reform* websites. The *Children, Youth, and Families Education and Research Network* website, *CYFERNet* is designed to provide "...programme, evaluation and technology assistance for children, youth and family community-based programmes". The website is a collaborative project that "...is funded (by) the U.S., Department of Agriculture's Cooperative State Research, Education, and Extension Service and the Cooperative Extension System" (Cooperative Extension System, 2000). Because of this, many of the curriculum links are to agricultural and 4-H educational activities. In contrast, the *CATALYST: Voices of Chicago School Reform* website sponsored by the Community Renewal Society, works "...to create racially and economically just communities" (Community Renewal Society, 2000). Its focus is on Chicago area urban educational issues, especially in regards to race and the economically disadvantaged. It provides information to help influence educational decision making as it relates to the organization's mission. On the one hand is a group that wishes to influence educational policy (and thus curriculum) to better meet the needs of children in an urban environment, and on the other a group trying to do the same for rural children. Although there may be a few communities where the two groups compete with one another, they do illustrate how the values and issues of various social groups can try to influence curriculum planning.

CURRICULUM FOUNDATION

At the foundation to every curriculum, including the planning, design, and implementation stages, is the educational philosophy of those directly involved in the process. Often this can influence to a great extent the direction a school or school district takes with its curriculum and instruction. At the school district this writer has been employed with, the philosophy has allowed for a diversity of instructional styles as a way of meeting a diversity of children's learning styles. This has led in the elementary school to several educational options available for students and parents: single-grade, single-grade clusters, multiage, looping,

and home-school hybrid educational environments. Because some of these educational structures have different instructional designs than others, there are available different curricular materials. Other nearby schools offer only a single choice and a single curriculum. The basis for these decisions can be found in the above mentioned factors as well as in the educational philosophies of the decision makers.

PRIORITIES AND RESOURCES IN CURRICULUM DESIGN

Scope: Describes the breadth and depth of the content to be included at any given level of instruction.

Integration: Describes the horizontal relationships among the various content topics and themes that students encounter at any given level of instruction.

Sequence: Describes the vertical relationships among the various content topics and themes that will help ensure cumulative and continuous learning. Smith, Stanley, and Shores describe four sequencing strategies.

- Simple to complex (inductive)
- Prerequisite — Some parts must be learned before other parts can be learned.
- Whole to part — General to specific (deductive)
- Chronological — Sequence reflects occurrence in real world.

Continuity: That part of sequencing that deals with the repetition of critical curriculum components to ensure their continual development. Bruner's "spiral curriculum," where skills are developed and then further developed at a later time by taking students to greater depth and/or breadth.

Articulation and Balance: Describes the interrelatedness of the components of curriculum design. Most frequently neglected aspect of curriculum design.

SUBJECT-CENTERED CURRICULUM DESIGNS

Separate Subjects:

1. Oldest and most common curriculum design.
2. Each subject is taught in relative isolation (U.S., History, English History, *etc.*) and, typically, progresses from simple to complex or in chronological order.
3. Teacher dominated and verbally oriented
4. Little, if any, attention to the needs or interests of the students. They are there to learn the content.
5. The greater the need for in-depth study (the higher the grade level), the greater the appropriateness of a subject-centered design.

DISCIPLINARITY

1. An off-shoot of the separate subjects design.
2. Groups separate subjects into larger disciplines (such as Social Science or Physical Science) which, according to theorists such as Bruner, have their own structure and mode of inquiry.

3. Learning the structure and mode of inquiry of each discipline, facilitates the specialization of knowledge.
4. Each course becomes a prerequisite for the following course as though each student was going to become a specialist in a given discipline.
5. Too little time in the school day to account for every discipline or knowledge specialty. "Alfred North Whitehead observed the "Lack of time is the rock upon which the fairest educational schemes are wrecked."

CORRELATION

1. Attempts to develop certain common relationships between or among two or more subjects while still retaining the usual subject divisions. For example, A literature course might be organized to relate to the work a history class through a:
   - Chronological-historical approach While a particular historical period is being studied in a history class, the literature written during that period could be studied in a literature class.
   - Thematic approach While themes such as man's inhumanity to man, or the effects of the Industrial Revolution are studied in a history class, literature reflecting these themes could be studied in a literature class.
   - Problems approach While the social problems of a particular period are studied in a history class, literature demonstrating social protest or concern could be studied in a literature class.
2. Least disruptive of the traditional curriculum.
3. Usually requires two or more teachers.
4. J. Lloyd Trump, Associate Secretary of the National Association of Secondary School Principals in 1956, introduced the term "team teaching"
   a. Two or more teachers would cooperate in planning, instruction, and evaluation
   b. Students would be grouped for special purposes
      (1) Large group instruction (40 percent of a student's time or about 12 hours per week)
      (2) Small group discussion (20 percent of the time or about six hours per week)
      (3) Independent study (40 percent of the time or about 12 hours per week)
   c. Flexible daily schedule, sometimes built around 15 minute modules that could be linked to form periods of varying lengths of time (modular scheduling).
   d. Use of teacher aides
   e. Recognition and utilization of individual teacher talents (differentiated staffing).
   f. Use of space and media appropriate to the purpose and content of instruction.

BROAD FIELDS OR FUSION

1. Attempts to develop some degree of synthesis or unity for one or more branches of knowledge such as the Social Sciences or the Fine Arts, as does Disciplinarity.
2. Sometimes creates new "broad fields" such as Ecology (Chemistry, Biology, Geography, Economics, Agriculture, Economics, Sociology, *etc.*), or the Humanities (Drama, Literature, History, Philosophy, Music, Visual Arts, Architecture)
3. The intention is to make a meaningful whole out of separate subjects. However, time constraints often mean that the approach provides only a survey of each of the subjects contributing to the "broad field."
4. Usually taught by one teacher.

CHILD-CENTERED CURRICULUM DESIGNS

A. Based on the belief that virtually all school learning activities should be centered around the felt needs and interests of the child.
B. Activity or Experience Curriculum
    1. Proposed at the turn of the century.
    2. Major objective was child growth through active experience that was visible to the naked eye.
    3. Francis Parker experimented with an "activity curriculum" in Quincy, Mass.
        a. There were no subjects at all at the first or second grades. The curriculum at these levels was based on "centers of interest" which changed from year to year.
        b. There was no pre-planning of the curriculum.
    4. Major problems
        a. No way to objectively assess student progress towards skills students needed to function in the society.
        b. No Horizontal or vertical structure. No way of determining what will be taught or when. No curriculum
C. Core Curriculum
    1. Proposed in the 1920s and 30s by Dewey and other Progressivists.
    2. The faculty is responsible for preplanning the content, resources, and activities that are organized around key societal problem areas and issues—arranged in an articulated sequence through the various grade levels.
    3. Students are typically grouped heterogeneously in order to demonstrate democratic values and ideals in the classroom and cooperation is valued more highly than competitiveness.
    4. Typical methodology is group work and reflective thinking.
    5. Major problems
        a. Often deals with the moral positions particularly as those positions bear on the resolution of social problems and issues.

b. Usually teachers have to develop their own instructional materials since there are few texts or instructional materials appropriate for particular cores, available commercially.
c. Requires extensive resource materials since solving real problems (experience or social) requires the use of methods and materials from several subject fields.

DEVELOPING THE GLOBAL DIMENSION IN THE SCHOOL CURRICULUM

National Curriculum

The National Curriculum includes the global dimension in both the overarching statement about the values, purposes and aims of the curriculum and within specific subjects.

The values and purposes of the National Curriculum state: "Education influences and reflects the values of society, and the kind of society we want to be… Education is… a route to equality of opportunity for all, a healthy and just democracy, a productive economy, and sustainable development. Education should reflect the enduring values that contribute to these ends. These include valuing ... the wider groups to which we belong, the diversity in our society and the environment in which we live… education must enable us to respond positively to the opportunities and challenges of the rapidly changing world in which we live and work ... we need to be prepared to engage as individuals, parents, workers and citizens with economic, social and cultural change, including the continued globalisation of the economy and society, with new work and leisure patterns and with the rapid expansion of communication technologies."

Aim 1 of the National Curriculum is "The school curriculum should aim to provide opportunities for all pupils to learn and to achieve." It states that "The school curriculum should contribute to the development of pupils' sense of identity through knowledge and understanding of the spiritual, moral, social and cultural heritages of Britain's diverse society and of the local, national, European, Commonwealth and global dimensions of their lives."

Aim 2 is "The school curriculum should aim to promote pupils' spiritual, moral, social and cultural development and prepare all pupils for the opportunities, responsibilities and experiences of life." It states "The school curriculum… should develop their knowledge, understanding and appreciation of their own and different beliefs and cultures, and how these influence individuals and societies. The school curriculum should pass on enduring values, develop pupils' integrity and autonomy and help them to be responsible and caring citizens capable of contributing to the development of a just society. It should promote equal opportunities and enable pupils to challenge discrimination and stereotyping. It should... secure their commitment to sustainable development at a personal, national and global level."

Attitudes and values are central to the aims of the National Curriculum and to the global dimension. These are developed and made explicit through the curriculum, the classroom environment and the wider school ethos.

The global dimension contributes to the development of key skills including Communication, cross-cultural communication, working with others, and an awareness of diverse perspectives on issues. It contributes to thinking skills by encouraging pupils to analyse, evaluate, question assumptions; and creatively identify ways to achieve positive change.

Programmes of study such as geography, history, art and design, design and technology, music and citizenship make explicit mention of the global dimension. However, all subjects provide opportunities for the global dimension and are enhanced by its inclusion.

Beyond the National Curriculum there are other important developments that demonstrate the importance of the global dimension:

Excellence and Enjoyment

"The 31 successful primary schools that Ofsted looked at in detail were successful because they took ownership of the curriculum, shaped it and made it their own, so that they could offer their children excellent teaching and a rich experience that was unique to their school."

There are also opportunities for secondary schools to use the secondary strategy to develop a broad and balanced curriculum incorporating the global dimension.

Diversity and Inclusion

Providing opportunities for children and young people to learn about and explore similarities and differences is central to developing the global dimension. One of the duties placed upon schools by the Race Relations Amendment Act (RRAA) 2000 is to promote good relations between persons of different racial groups. The statutory inclusion statement within the National Curriculum supports the modification of the programmes of study to meet the needs of all learners. In the light of the RRAA 2000 and the inclusion statement schools have a responsibility to provide a broad and balanced curriculum for all children and young people.

The global dimension is appropriate for children and young people of all backgrounds, ages and abilities. The school curriculum should meet the needs of children and young people and reflect the context of the wider community beyond the school. Children and young people themselves bring different experiences, interests and strengths (including those that are social, cultural, linguistic, ethnic and religious) that influence the way they learn. These experiences can also provide an invaluable contribution to what they learn. It is important for schools to ensure due care and attention is given to the use of language and the portrayal of images, for example, to ensure that developing countries are not typecast, but that materials reflect a balanced and undistorted representation of the cultural, socio-economic and political diversity.

The QCA guidance 'Respect for all: valuing diversity and challenging racism through the curriculum' offers practical support to schools as they promote race equality and positive race relations through different subjects in the curriculum. This may provide a useful starting point when exploring such issues in the context of developing the global dimension. The global dimension can inform the whole school ethos, leading to a school which is inclusive, just and democratic and promotes social and environmental responsibility, respect and cooperation.

The Global Dimension in Practice

Learning across the curriculum can be an important way of supporting children and young people to understand global issues and to make links between their learning in different subjects. The eight concepts on pages 20 to 22 provide a conceptual framework for thinking about the global dimension and building it into the curriculum.

In lesson planning, they can be used as 'lenses' to look at issues in a range of ways. For example, if a class looks at a particular song in Music: through a conflict resolution 'lens', they might consider the conflict or conflict resolution implicit in the words; through a diversity 'lens' they might consider the diverse cultural influences on the musical composition; and through a sustainable development 'lens', the sustainability of the instruments used.

The concepts can also help with planning and evaluation. While no school or class will address each equally, the 8 concepts are interconnected and an integrated approach is essential. For example, good education for sustainable development incorporates aspects of all eight concepts.

Differentiation and Progression

The global dimension is best planned for with a view to progression through the Key Stages and the role of non-formal learning. Children and young people will develop according to their own level of understanding and will move through the developmental stages but this may not equate to the Key Stages as outlined. Progression can be described as follows:

In the Foundation Stage children are offered a variety of experiences that encourage and support them to begin to make connections between different parts of their life experience. They become aware of their relationships to others and of the different communities that they are part of, for example, family and school. They begin to develop awareness of diversity of peoples, places, cultures, languages and religions. They begin to understand fairness, the need to care for other people and the environment, and to be sensitive to the needs and views of others.

At Key Stage 1 children begin to develop a sense of their own worth and the worth of others. They develop a sense of themselves as part of a wider world and gain awareness of a range of cultures and places. They learn that all humanity shares the same basic needs but that there are differences in how and to what extent these needs are met.

At Key Stage 2 children develop their understanding beyond their own experience and build up their knowledge of the wider world and of diverse societies and cultures. They learn about the similarities and differences between people and places around the world and about disparities in the world. They develop their sense of social justice and moral responsibility and begin to understand that their own choices can affect global issues, as well as local ones.

At Key Stage 3 & 4 children and young people develop their understanding of their role as citizens within local and global contexts and extend their knowledge of the wider world. Their understanding of issues such as poverty, social justice and sustainable development increases. They realise the importance of taking action and how this can improve the world for future generations. They critically assess information available to them and challenge cases of discrimination and injustice.

Throughout their school experience, children's and young people's awareness and understanding of the global dimension might progress as follows:

Foundation Stage

For ease of reference the activities have been arranged by area of learning. The headings show the area of learning which is likely to be the main focus of each activity. Most activities will contribute to more than one area of learning. For example, the activity around reusing, repairing and recycling materials and making toys appears under PSED because of the contribution to showing concern for the environment. It also links to other areas including designing and making skills in KUW and using tools and equipment in PD. In approaching each activity in the classroom, the practitioner may choose a different focus to that suggested below.

Personal, Social and Emotional Development

Children consider people in particular situations and whether they might be happy, sad, hungry or lonely using pictures and photographs. Children look at photos of other children from around the world and discuss what needs we all have such as love, a home, friends, food, water, security and shelter.

Children listen to and discuss stories from different countries about issues of right and wrong, the needs of others and how we can help one another. Children talk about places they have visited for different reasons, for example, on holiday, for recreation, religion or to visit relatives. They discuss how they feel about places. These discussions might be triggered by objects such as travel tickets or money. Children can be involved in reusing, repairing and recycling materials, instead of throwing them away. Learning might be triggered by looking at recycled toys or making toys from 'rubbish'.

Practitioners encourage children to try activities from different cultures and contrast differences and similarities for example, food choices relating to cultural and religious traditions. Children discuss the unfairness of bullying people due to physical appearance, for example, through stories.

Communication, Language and Literacy

Children listen to and talk about stories from around the world and on topics such as fairness and the environment. Children imitate the positive, anti-discriminatory language of the practitioner. In conflict situations, children are encouraged to consider others' feelings and suggest appropriate ways forward. They also do this when not directly involved in a conflict through discussing photos, stories and through puppets. Children talk about how their behaviour affects others. They consider what might happen if they acted differently. Children hear a range of languages spoken by children or people they have connections with. Community languages are valued. Children are introduced to a range of written scripts and dual language books.

Mathematical Development

When discussing numbers, children's different experience of number in a range of languages is shared with others. Children play counting games from different countries and count objects from around the world. Children look at photographs and drawings showing how a range of cultures use number, shape and pattern.

Knowledge and Understanding of the World

Children explore photographs, books and artefacts from around the world and reflect on similarities and differences between people and places locally and elsewhere in the world. Children are introduced to a range of cultures and religions through stories, music, dance, food and role-play using clothes, cooking implements, symbols and toys. Children learn about sustainable gardening practices such as composting, and the importance of looking after the environment. When looking at distant 'strangers' in photographs or video, children can be encouraged to imagine ways of life based on common or familiar experiences: food, brothers and sisters, toys and games. In other words, similarities can be emphasised as well as differences.

Children take part in role play (such as being a travel agent) to explore what different places are like using brochures, pictures and children's own holiday photographs and find these places on maps and globes. Thematic approaches such as the journey to school, what we do in school or foods that we eat can also be helpful when talking about life in other countries.

A NEW APPROACH OF CURRICULUM DEVELOPMENT

The current trend is to promote networked curriculum development with several interactions (top-down and bottom-up), while trying to take into account the needs—not only the educational requirements—and to rebuild the way of conceptualizing reality and education systems, in order that political authorities are no longer found at the top, but in the centre of curriculum development

dynamics. These authorities thus become stimulating bodies that promote multiple interactions between teaching institutions and society, jointly defining the meaning, the knowledge, the methods and the spaces of education. There are several groups working on the curriculum. Nevertheless, comparative studies on the curriculum are not yet abundant. The discipline "comparative education" has rather dealt with issues such as the definition of educational policies, education system structures and trends of schooling worldwide. In recent years, however, a need for more comparative research in the field of the curriculum has come to the fore.

Indeed, in recent years, various comparative research projects on students' learning achievements have been carried out, especially in the most advanced countries of the world.

These research programmes could be considered as producing an "international evaluated curriculum", although this issue has not set off much reaction among the international community. On the other hand, the gathering and analysis of information on the curriculum offered to teachers and as taught in educational institutions is not sufficiently developed. To meet existing needs in terms of information, especially for better promoting education to live together in an increasingly interdependent world, UNESCO's International Bureau of Education (www.ibe.unesco.org), based in Geneva, has received a new mission. Within the framework of this mission, the IBE is one of the sources giving access to information about curricula in the contemporary world and contributing to comparative education.

CURRICULUM THEORY AND PRACTICE

The organization of schooling and further education has long been associated with the idea of a curriculum. But what actually is curriculum, and how might it be conceptualized? We explore curriculum theory and practice and its relation to informal education.

The idea of curriculum is hardly new-but the way we understand and theorize it has altered over the years-and there remains considerable dispute as to meaning. It has its origins in the running/chariot tracks of Greece. It was, literally, a course.

In Latin curriculum was a racing chariot; *currere* was to run. A useful starting point for us here might be the definition offered by John Kerr and taken up by Vic Kelly in his standard work on the subject. Kerr defines curriculum as, 'All the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school. This gives us some basis to move on-and for the moment all we need to do is highlight two of the key features: Learning is planned and guided. We have to specify in advance what we are seeking to achieve and how we are to go about it. The definition refers to schooling. We should recognize that our current appreciation of curriculum theory and practice emerged in the school and in relation to other schooling ideas such as subject and lesson.

In what follows we are going to look at four ways of approaching curriculum theory and practice:

1. Curriculum as a body of knowledge to be transmitted.
2. Curriculum as an attempt to achieve certain ends in students-product.
3. Curriculum as process.
4. Curriculum as praxis.

It is helpful to consider these ways of approaching curriculum theory and practice in the light of Aristotle's influential categorization of knowledge into three disciplines: the theoretical, the productive and the practical.

CURRICULUM AS A SYLLABUS TO BE TRANSMITTED

Many people still equate a curriculum with a syllabus. Syllabus, naturally, originates from the Greek (although there was some confusion in its usage due to early misprints). Basically it means a concise statement or table of the heads of a discourse, the contents of a treatise, the subjects of a series of lectures. In the form that many of us will have been familiar with it is connected with courses leading to examinations-teachers talk of the syllabus associated with, say, the Cambridge Board French GSCE exam. What we can see in such documents is a series of headings with some additional notes which set out the areas that may be examined.

A syllabus will not generally indicate the relative importance of its topics or the order in which they are to be studied. In some cases as Curzon (1985) points out, those who compile a syllabus tend to follow the traditional textbook approach of an 'order of contents', or a pattern prescribed by a 'logical' approach to the subject, or -consciously or unconsciously-a the shape of a university course in which they may have participated. Thus, an approach to curriculum theory and practice which focuses on syllabus is only really concerned with content. Curriculum is a body of knowledge-content and/or subjects. Education in this sense, is the process by which these are transmitted or 'delivered' to students by the most effective methods that can be devised (Blenkin et al 1992: 23).

Where people still equate curriculum with a syllabus they are likely to limit their planning to a consideration of the content or the body of knowledge that they wish to transmit. 'It is also because this view of curriculum has been adopted that many teachers in primary schools', Kelly (1985: 7) claims, 'have regarded issues of curriculum as of no concern to them, since they have not regarded their task as being to transmit bodies of knowledge in this manner'.

CURRICULUM AS PRODUCT

The dominant modes of describing and managing education are today couched in the productive form. Education is most often seen as a technical exercise. Objectives are set, a plan drawn up, then applied, and the outcomes (products) measured. It is a way of thinking about education that has grown in influence in the United Kingdom since the late 1970s with the rise of vocationalism and the concern with competencies. Thus, in the late 1980s and the 1990s many of the

debates about the National Curriculum for schools did not so much concern how the curriculum was thought about as to what its objectives and content might be.

It is the work of two American writers Franklin Bobbitt (1918; 1928) and Ralph W. Tyler (1949) that dominate theory and practice within this tradition. In *The Curriculum* Bobbitt writes as follows:

The central theory [of curriculum] is simple. Human life, however varied, consists in the performance of specific activities. Education that prepares for life is one that prepares definitely and adequately for these specific activities. However numerous and diverse they may be for any social class they can be discovered. This requires only that one go out into the world of affairs and discover the particulars of which their affairs consist. These will show the abilities, attitudes, habits, appreciations and forms of knowledge that men need. These will be the objectives of the curriculum. They will be numerous, definite and particularized. The curriculum will then be that series of experiences which children and youth must have by way of obtaining those objectives. (1918: 42)

This way of thinking about curriculum theory and practice was heavily influenced by the development of management thinking and practice. The rise of 'scientific management' is often associated with the name of its main advocate F. W. Taylor. Basically what he proposed was greater division of labour with jobs being simplified; an extension of managerial control over all elements of the workplace; and cost accounting based on systematic time-and-motion study.

All three elements were involved in this conception of curriculum theory and practice. For example, one of the attractions of this approach to curriculum theory was that it involved detailed attention to what people needed to know in order to work, live their lives and so on. A familiar, and more restricted, example of this approach can be found in many training programmes, where particular tasks or jobs have been analyzed-broken down into their component elements-and lists of competencies drawn up. In other words, the curriculum was not to be the result of 'armchair speculation' but the product of systematic study. Bobbitt's work and theory met with mixed responses.

One telling criticism that was made, and can continue to be made, of such approaches is that there is no social vision or programme to guide the process of curriculum construction. As it stands it is a technical exercise. However, it wasn't criticisms such as this which initially limited the impact of such curriculum theory in the late 1920s and 1930s. Rather, the growing influence of 'progressive', child-centred approaches shifted the ground to more romantic notions of education. Bobbitt's long lists of objectives and his emphasis on order and structure hardly sat comfortably with such forms.

The Progressive movement lost much of its momentum in the late 1940s in the United States and from that period the work of Ralph W. Tyler, in particular, has made a lasting impression on curriculum theory and practice. He shared Bobbitt's emphasis on rationality and relative simplicity. His theory was based on four fundamental questions:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained? (Tyler 1949: 1)

Like Bobbitt he also placed an emphasis on the formulation of behavioural objectives.

Since the real purpose of education is not to have the instructor perform certain activities but to bring about significant changes in the students' pattern of behaviour, it becomes important to recognize that any statements of objectives of the school should be a statement of changes to take place in the students. (Tyler 1949: 44)

We can see how these concerns translate into a nicely-ordered procedure: one that is very similar to the technical or productive thinking set out below.

Step 1: Diagnosis of need
Step 2: Formulation of objectives
Step 3: Selection of content
Step 4: Organization of content
Step 5: Selection of learning experiences
Step 6: Organization of learning experiences
Step 7: Determination of what to evaluate and of the ways and means of doing it.

The attraction of this way of approaching curriculum theory and practice is that it is systematic and has considerable organizing power. Central to the approach is the formulation of behavioural objectives-providing a clear notion of outcome so that content and method may be organized and the results evaluated.

There are a number of issues with this approach to curriculum theory and practice. The first is that the plan or programme assumes great importance. For example, we might look at a more recent definition of curriculum as: 'A programme of activities (by teachers and pupils) designed so that pupils will attain so far as possible certain educational and other schooling ends or objectives (Grundy 1987: 11).

The problem here is that such programmes inevitably exist prior to and outside the learning experiences. This takes much away from learners. They can end up with little or no voice. They are told what they must learn and how they will do it. The success or failure of both the programme and the individual learners is judged on the basis of whether pre-specified changes occur in the behaviour and person of the learner (the meeting of behavioural objectives).

If the plan is tightly adhered to, there can only be limited opportunity for educators to make use of the interactions that occur. It also can deskill educators in another way. For example, a number of curriculum programmes, particularly in the USA, have attempted to make the student experience 'teacher proof'.

The logic of this approach is for the curriculum to be designed outside of the classroom or school, as is the case with the National Curriculum in the UK. Educators then apply programmes and are judged by the products of their actions. It turns educators into technicians.

Second, there are questions around the nature of objectives. This model is hot on measurability. It implies that behaviour can be objectively, mechanistically measured. There are obvious dangers here-there always has to be some uncertainty about what is being measured. We only have to reflect on questions of success in our work. It is often very difficult to judge what the impact of particular experiences has been. Sometimes it is years after the event that we come to appreciate something of what has happened. For example, most informal educators who have been around a few years will have had the experience of an ex-participant telling them in great detail about how some forgotten event (forgotten to the worker that is) brought about some fundamental change. Yet there is something more.

In order to measure, things have to be broken down into smaller and smaller units. The result, as many of you will have experienced, can be long lists of often trivial skills or competencies. This can lead to a focus in this approach to curriculum theory and practice on the parts rather than the whole; on the trivial, rather than the significant. It can lead to an approach to education and assessment which resembles a shopping list. When all the items are ticked, the person has passed the course or has learnt something. The role of overall judgment is somehow sidelined.

Third, there is a real problem when we come to examine what educators actually do in the classroom, for example. Much of the research concerning teacher thinking and classroom interaction, and curriculum innovation has pointed to the lack of impact on actual pedagogic practice of objectives. One way of viewing this is that teachers simply get it wrong-they ought to work with objectives. I think we need to take this problem very seriously and not dismiss it in this way. The difficulties that educators experience with objectives in the classroom may point to something inherently wrong with the approach-that it is not grounded in the study of educational exchanges. It is a model of curriculum theory and practice largely imported from technological and industrial settings.

Fourth, there is the problem of unanticipated results. The focus on pre-specified goals may lead both educators and learners to overlook learning that is occurring as a result of their interactions, but which is not listed as an objective.

The apparent simplicity and rationality of this approach to curriculum theory and practice, and the way in which it mimics industrial management have been powerful factors in its success. A further appeal has been the ability of academics to use the model to attack teachers:

I believe there is a tendency, recurrent enough to suggest that it may be endemic in the approach, for academics in education to use the objectives model as a stick with which to beat teachers. ‘What are your objectives?’ is more often asked in a tone of challenge than one of interested and helpful inquiry. The

demand for objectives is a demand for justification rather than a description of ends... It is not about curriculum design, but rather an expression of irritation in the problems of accountability in education. (Stenhouse 1974: 77)

So what are the other alternatives?

CURRICULUM AS PROCESS

We have seen that the curriculum as product model is heavily dependent on the setting of behavioural objectives. The curriculum, essentially, is a set of documents for implementation. Another way of looking at curriculum theory and practice is via process. In this sense curriculum is not a physical thing, but rather the interaction of teachers, students and knowledge. In other words, curriculum is what actually happens in the classroom and what people do to prepare and evaluate. What we have in this model is a number of elements in constant interaction. It is an active process and links with the practical form of reasoning set out by Aristotle.

Perhaps the two major things that set this apart from the model for informal education are first, the context in which the process occurs ('particular schooling situations'); and second, the fact that teachers enter the classroom or any other formal educational setting with a more fully worked-through idea of what is about to happen. Here I have described that as entering the situation with 'a proposal for action which sets out essential principles and features of the educational encounter'.

This form of words echoes those of Lawrence Stenhouse (1975) who produced one of the best-known explorations of a process model of curriculum theory and practice. He defined curriculum tentatively: 'A curriculum is an attempt to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny and capable of effective translation into practice'. He suggests that a curriculum is rather like a recipe in cookery.

It can be criticized on nutritional or gastronomic grounds-does it nourish the students and does it taste good?-and it can be criticized on the grounds of practicality-we can't get hold of six dozen larks' tongues and the grocer can't find any ground unicorn horn! A curriculum, like the recipe for a dish, is first imagined as a possibility, then the subject of experiment. The recipe offered publicly is in a sense a report on the experiment. Similarly, a curriculum should be grounded in practice. It is an attempt to describe the work observed in classrooms that it is adequately communicated to teachers and others. Finally, within limits, a recipe can varied according to taste. So can a curriculum. (Stenhouse 1975: 4-5)

Stenhouse shifted the ground a little bit here. He was not saying that curriculum is the process, but rather the means by which the experience of attempting to put an educational proposal into practice is made available. The reason why he did this, I suspect, is that otherwise there is a danger of widening the meaning of the term so much that it embraces almost everything and hence means very little.

For example, in a discussion of the so-called 'youth work curriculum' (Newman & Ingram 1989), the following definition was taken as a starting point: 'those processes which enhance or, if they go wrong, inhibit a person's learning'.

This was then developed and a curriculum became: 'an organic process by which learning is offered, accepted and internalized'. The problem with this sort of definition, as Robin Barrow (1984) points out, is that what this does is to widen the meaning of the term to such an extent that it just about becomes interchangeable with 'education' itself.

More specifically, if curriculum is process then the word curriculum is redundant because process would do very nicely! The simple equation of curriculum with process is a very slap-happy basis on which to proceed.

We also need to reflect on why curriculum theory and practice came into use by educators (as against policy-makers). It was essentially as a way of helping them to think about their work before, during and after interventions; as a means of enabling educators to make judgments about the direction their work was taking. This is what Stenhouse was picking up on.

STENHOUSE ON CURRICULUM

As a minimum, a curriculum should provide a basis for planning a course, studying it empirically and considering the grounds of its justification. It should offer:

In planning:

1. Principle for the selection of content-what is to be learned and taught
2. Principles for the development of a teaching strategy-how it is to be learned and taught.
3. Principles for the making of decisions about sequence.
4. Principles on which to diagnose the strengths and weaknesses of individual students and differentiate the general principles 1, 2 and 3 above, to meet individual cases.

In empirical study:

1. Principles on which to study and evaluate the progress of students.
2. Principles on which to study and evaluate the progress of teachers.
3. Guidance as to the feasibility of implementing the curriculum in varying school contexts, pupil contexts, environments and peer-group situations.
4. Information about the variability of effects in differing contexts and on different pupils and an understanding of the causes of the variation.

In relation to justification:

A formulation of the intention or aim of the curriculum which is accessible to critical scrutiny. There are a number of contrasts in this model of curriculum theory and practice as compared with the product model. First, where the product model appeals to the workshop for a model, this process model looks to the world of experimentation.

The idea is that of an educational science in which each classroom is a laboratory, each teacher a member of the scientific community... The crucial point

is that the proposal is not to be regarded as an unqualified recommendation but rather as a provisional specification claiming no more than to be worth putting to the test of practice, Such proposals claim to be intelligent rather than correct. (Stenhouse 1975: 142)

Thus, in this sense, a curriculum is a particular form of specification about the practice of teaching. It is not a package of materials or a syllabus of ground to be covered. 'It is a way of translating any educational idea into a hypothesis testable in practice. It invites critical testing rather than acceptance' (Stenhouse 1975: 142).

Second, and associated with the above, given the uniqueness of each classroom setting, it means that any proposal, even at school level, needs to be tested, and verified by each teacher in his/her classroom (*ibid*: 143). It is not like a curriculum package which is designed to be delivered almost anywhere.

Third, outcomes are no longer the central and defining feature. Rather than tightly specifying behavioural objectives and methods in advance, what happens in this model of curriculum theory and practice is that content and means develop as teachers and students work together.

Fourth, the learners in this model are not objects to be acted upon. They have a clear voice in the way that the sessions evolve. The focus is on interactions. This can mean that attention shifts from teaching to learning. The product model, by having a pre-specified plan or programme, tends to direct attention to teaching. For example, how can this information be got over? A process approach to curriculum theory and practice, it is argued by writers like Grundy (1987), tends towards making the process of learning the central concern of the teacher. This is because this way of thinking emphasizes interpretation and meaning-making. As we have seen each classroom and each exchange is different and has to be made sense of.

However, when we come to think about this way of approaching curriculum in practice, a number of possible problems do arise. The first is a problem for those who want some greater degree of uniformity in what is taught. This approach to the theory of curriculum, because it places meaning-making and thinking at its core and treats learners as subjects rather than objects, can lead to very different means being employed in classrooms and a high degree of variety in content. As Stenhouse comments, the process model is essentially a critical model, not a marking model.

It can never be directed towards an examination as an objective without loss of quality, since the standards of the examination then override the standards immanent in the subject. This does not mean that students taught on the process model cannot be examined, but it does mean that the examinations must be taken in their stride as they pursue other aspirations. And if the examination is a by-product there is an implication that the quality the student shows in it must be an under-estimate of his real quality. It is hence rather difficult to get the weak student through an examination using a process model. Crammers cannot use it, since it depends upon a commitment to educational aims. (Stenhouse 1975: 95)

To some extent variation is limited by factors such as public examinations. The exchange between students and teachers does not float free of the context in which it arises. At the end of the day many students and their families place a high premium on exam or subject success and this inevitably enters into the classroom. This highlights a second problem with the model we have just outlined-that it may not pay enough attention to the context in which learning takes place. Third, there is the 'problem' of teachers. The major weakness and, indeed, strength of the process model is that it rests upon the quality of teachers. If they are not up to much then there is no safety net in the form of prescribed curriculum materials. The approach is dependent upon the cultivation of wisdom and meaning-making in the classroom. If the teacher is not up to this, then there will be severe limitations on what can happen educationally. There have been some attempts to overcome this problem by developing materials and curriculum packages which focus more closely on the 'process of discovery' or 'problem-solving', for example in science. But there is a danger in this approach. Processes become reduced to sets of skills-for example, how to light a bunsen burner. When students are able to demonstrate certain skills, they are deemed to have completed the process. As Grundy comments, the actions have become the ends; the processes have become the product. Whether or not students are able to apply the skills to make sense of the world around them is somehow overlooked (Grundy 1987: 77).

Fourth, we need to look back at our process model of curriculum theory and practice and what we have subsequently discussed, and return to Aristotle and to Freire. The model we have looked at here does not fully reflect the process explored earlier. In particular, it does not make explicit the commitments associated with phronesis. And it is to that we will now turn.

CURRICULUM AS PRAXIS

Curriculum as praxis is, in many respects, a development of the process model. While the process model is driven by general principles and places an emphasis on judgment and meaning making, it does not make explicit statements about the interests it serves. It may, for example, be used in such a way that does not make continual reference to collective human well-being and to the emancipation of the human spirit. The praxis model of curriculum theory and practice brings these to the centre of the process and makes an explicit commitment to emancipation. Thus action is not simply informed, it is also committed. It is praxis.

Critical pedagogy goes beyond situating the learning experience within the experience of the learner: it is a process which takes the experiences of both the learner and the teacher and, through dialogue and negotiation, recognizes them both as problematic... [It] allows, indeed encourages, students and teachers together to confront the real problems of their existence and relationships... When students confront the real problems of their existence they will soon also be faced with their own oppression. We can amend our 'curriculum as process' model to take account of these concerns.

CURRICULUM AS PRAXIS

Teachers enter particular schooling and situations with a personal, but shared idea of the good and a commitment to human emancipation, an ability to think critically,-in-action an understanding of their role and the expectations others have of them, and a proposal for action which sets out essential principles and features of the educational encounter.

Guided by these, they encourage conversations between, and with, people in the situation out of which may come informed and committed action. They continually evaluate the process and what they can see of outcomes. In this approach the curriculum itself develops through the dynamic interaction of action and reflection. 'That is, the curriculum is not simply a set of plans to be implemented, but rather is constituted through an active process in which planning, acting and evaluating are all reciprocally related and integrated into the process' (Grundy 1987: 115). At its centre is *praxis*: informed, committed action.

How might we recognize this? First, I think we should be looking for practice which does not focus exclusively on individuals, but pays careful attention to collective understandings and practices and to structural questions. For example, in sessions which seek to explore the experiences of different cultural and racial groups in society, we could be looking to see whether the direction of the work took people beyond a focus on individual attitudes. Are participants confronting the material conditions through which those attitudes are constituted, for example?

Second, we could be looking for a commitment expressed in action to the exploration of educators' values and their practice. Are they, for example, able to say in a coherent way what they think makes for human well-being and link this with their practice? We could also be looking for certain values-especially an emphasis on human emancipation.

Third, we could expect practitioners committed to praxis to be exploring their practice with their peers. They would be able to say how their actions with respect to particular interventions reflected their ideas about what makes for the good, and to say what theories were involved.

CURRICULUM IN CONTEXT

To round off this discussion of curriculum we do need to pay further attention to the social context in which it is created. One criticism that has been made of the praxis model (especially as it is set out by Grundy) is that it does not place a strong enough emphasis upon context. This is a criticism that can also be laid at the door of the other approaches. In this respect the work of Catherine Cornbleth (1990) is of some use. She sees curriculum as a particular type of process. Curriculum for her is what actually happens in classrooms, that is, 'an ongoing social process comprised of the interactions of students, teachers, knowledge and milieu' (1990: 5). In contrast, Stenhouse defines curriculum as the attempt to describe what happens in classrooms rather than what actually occurs. Cornbleth further contends that curriculum as practice cannot be

understood adequately or changed substantially without attention to its setting or context. Curriculum is contextually shaped. While I may quibble about the simple equation of curriculum with process, what Cornbleth does by focusing on the interaction is to bring out the significance of context.

First, by introducing the notion of milieu into the discussion of curriculum she again draws attention to the impact of some factors that we have already noted. Of especial significance here are examinations and the social relationships of the school-the nature of the teacher-student relationship, the organization of classes, streaming and so on.

These elements are what are sometimes known as the hidden curriculum. This was a term credited to Philip W. Jackson (1968) but it had been present as an acknowledged element in education for some time before. For example, John Dewey in *Experience and Education* referred to the 'collateral learning' of attitudes that occur in schools, and that may well be of more long-range importance than the explicit school curriculum (1938: 48). A fairly standard (product) definition of the 'hidden curriculum' is given by Vic Kelly. He argues it is those things which students learn, 'because of the way in which the work of the school is planned and organized but which are not in themselves overtly included in the planning or even in the consciousness of those responsible for the school arrangements (1988: 8).

The learning associated with the 'hidden curriculum' is most often treated in a negative way. It is learning that is smuggled in and serves the interests of the status quo. The emphasis on regimentation, on bells and time management, and on streaming are sometimes seen as preparing young people for the world of capitalist production.

What we do need to recognize is that such 'hidden' learning is not all negative and can be potentially liberating. 'In so far as they enable students to develop socially valued knowledge and skills... or to form their own peer groups and subcultures, they may contribute to personal and collective autonomy and to possible critique and challenge of existing norms and institutions' (Cornbleth 1990: 50). What we also need to recognize is that by treating curriculum as a contextualized social process, the notion of hidden curriculum becomes rather redundant. If we need to stay in touch with milieu as we build curriculum then it is not hidden but becomes a central part of our processes. Second, by paying attention to milieu, we can begin to get a better grasp of the impact of structural and socio-cultural process on teachers and students. As Cornbleth argues, economic and gender relations, for example, do not simply bypass the systemic or structural context of curriculum and enter directly into classroom practice. They are mediated by intervening layers of the education system (Cornbleth 1990: 7). Thus, the impact of these factors may be quite different to that expected. Third, if curriculum theory and practice is inextricably linked to milieu then it becomes clear why there have been problems about introducing it into non-schooling contexts like youth work; and it is to this area which we will now turn.

CURRICULUM AS THE BOUNDARY BETWEEN FORMAL AND INFORMAL EDUCATION

Jeffs and Smith (1990; 1999) have argued that the notion of curriculum provides a central dividing line between formal and informal education. They contend that curriculum theory and practice was formed within the schooling context and that there are major problems when it is introduced into informal forms of pedagogy. The adoption of curriculum theory and practice by some informal educators appears to have arisen from a desire to be clear about content. Yet there are crucial difficulties with the notion of curriculum in this context. These centre around the extent to which it is possible to have a clear idea, in advance (and even during the process), of the activities and topics that will be involved in a particular piece of work.

At any one time, outcomes may not be marked by a high degree of specificity. In a similar way, the nature of the activities used often cannot be predicted. It may be that we can say something about how the informal educator will work. However, knowing in advance about broad processes and ethos isn't the same as having a knowledge of the programme. We must, thus, conclude that approaches to the curriculum which focus on objectives and detailed programmes appear to be incompatible with informal education. (Jeffs & Smith 1990: 15)

In other words, they are arguing that a product model of curriculum is not compatible with the emphasis on process and praxis within informal education.

However, process and praxis models of curriculum also present problems in the context of informal education. If you look back at at our models of process and compare them with the model of informal education presented above then it is clear that we can have a similar problem with pre-specification. One of the key feature that differentiates the two is that the curriculum model has the teacher entering the situation with a proposal for action which sets out the essential principles and features of the educational encounter. Informal educators do not have, and do not need, this element. They do not enter with a clear proposal for action. Rather, they have an idea of what makes for human well-being, and an appreciation of their overall role and strategy (strategy here being some idea about target group and broad method *e.g.*, detached work). They then develop their aims and interventions in interaction. And what is this element we have been discussing? It is nothing more nor less than what Stenhouse considers to be a curriculum!

The other key difference is context. Even if we were to go the whole hog and define curriculum as process there remain substantive problems. As Cornbleth (1990), and Jeffs and Smith (1990, 1999) have argued, curriculum cannot be taken out of context, and the context in which it was formed was the school. Curriculum theory and practice only makes sense when considered alongside notions like class, teacher, course, lesson and so on. You only have to look at the language that has been used by our main proponents: Tyler, Stenhouse, Cornbleth and Grundy, to see this. It is not a concept that stands on its own. It

developed in relation to teaching and within particular organizational relationships and expectations. Alter the context and the nature of the process alters. We then need different ways of describing what is going on. Thus, it is no surprise that when curriculum theory and practice are introduced into what are essentially informal forms of working such as youth work and community work, their main impact is to formalize significant aspects of the work.

One of the main outcome of curriculum experiments within youth work has been work, for example in the field of health promotion, which involve pre-specified activities, visiting workers, regular meetings and so on. Within the language of youth work these are most often called programmes or projects (Foreman 1990). Within a school they would be called a course.

What is being suggested here is that when informal educators take on the language of curriculum they are crossing the boundary between their chosen specialism and the domain of formal education. This they need to do from time to time. There will be formal interludes in their work, appropriate times for them to mount courses and to discuss content and method in curriculum terms. But we should not fall into the trap of thinking that to be educators we have to adopt curriculum theory and practice. The fact that so many have been misled into believing this demonstrates just how powerful the ideas of schooling are. Education is something more than schooling.

PRINCIPLES OF TEACHING

"Principles of Teaching" is a comprehensive guidebook tailored for educators seeking to enhance their pedagogical practices. Authored by experts in the field of education, this book provides a thorough exploration of the foundational principles underpinning effective teaching methodologies. With a blend of theoretical insights and practical strategies, it offers valuable resources for both novice and experienced teachers alike. The book begins by examining the fundamental principles of learning, emphasizing the importance of understanding student diversity, learning styles, and developmental stages. It then delves into the process of designing instruction, guiding readers through the creation of engaging lesson plans that align with clear learning objectives and integrate innovative teaching approaches. Methods of teaching and learning encompass a diverse range of strategies and approaches aimed at facilitating effective education. This includes traditional methods such as lectures, demonstrations, and discussions, as well as more modern techniques like interactive multimedia presentations and online learning platforms. Effective teaching methods often involve a combination of instructional techniques tailored to meet the diverse needs and learning styles of students. Moreover, fostering active learning through hands-on activities, collaborative projects, and problem-solving exercises can enhance student engagement and comprehension. Throughout the chapters, readers are introduced to various techniques for facilitating active learning experiences, fostering critical thinking, and promoting deeper understanding among students. Additionally, the book emphasizes the significance of ongoing assessment and feedback as integral components of the teaching and learning process. Overall, "Principles of Teaching" serves as an invaluable resource for educators looking to refine their instructional practices and cultivate positive learning experiences for their students.

Minakshi Mishra is a distinguished education professional with 18 years of rich experience marked by notable achievements and impactful contributions. Her illustrious career includes a decade-long tenure as a Principal, during which she demonstrated effective leadership and management skills. Engaging in diverse teaching roles across various educational institutions, Mishra has showcased versatility and dedication in her field. With a strong academic foundation, Mishra holds a Ph.D. and M.Phil. in Education, complemented by proficiency in computer basics, enhancing administrative efficiency. Her achievements include securing a commendable NAAC ranking for Bharti College and spearheading curriculum development and counseling initiatives, fostering holistic student development. Mishra's contributions extend to organizing and leading numerous national seminars and workshops, enriching the educational landscape. In the realm of research, Mishra has guided Ph.D. scholars and published insightful papers in reputable journals, showcasing her expertise and thought leadership. Her multifaceted expertise, dedication, and leadership in education position her as a prominent figure driving positive change and innovation in the field.

Sant Lal Sarwa is a dedicated scholar and Assistant Professor at the Faculty of Education, Tantia University, Sri Ganganagar (Rajasthan), with a profound commitment to learning and intellectual exploration. He holds an M.A. in Geography from MDS University, Ajmer, complemented by an M.A. in Psychology and a P.G. Diploma in Guidance and Counseling from VMOU, Kota. Further enriching his academic repertoire, he earned an M.Ed. from IGNOU and qualified in NET exams for both Education and Geography. Currently pursuing a Ph.D. at MGSU, Bikaner, Sarwa's scholarly contributions span national and international seminars, research projects, and publications, focusing on geography, psychology, and education. In his role as an educator, he passionately fosters critical thinking and knowledge dissemination among students. With over fifteen national and international seminar presentations, Sarwa solidifies his reputation as a distinguished scholar dedicated to advancing scholarship in his fields of expertise.

ACADEMIC
UNIVERSITY PRESS

4378/4-B, Murarilal Street, Ansari Road, Daryaganj, New Delhi-110002
Phone : +91-11-23281685, 41043100, Fax: +91-11-23270680
E-Mail: academicuniversitypress@gmail.com

ISBN-978-93-6284-933-5