Seventh-day Adventist
Secondary Curriculum

First Edition November 1990

Industrial Technology

Institute for
Christian
Teaching

EDUCATION DEPARTMENT
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ACKNOWLEDGEMENTS

The South Pacific Division Curriculum Unit has enlisted the help of a number of teachers in preparing this document. We would like to thank all who have contributed time, ideas, materials and support in many tangible and intangible ways. In particular, the members of the Industrial Technology Curriculum Group which met in May 1989 who helped directly in the writing and editing:

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It is our wish that teachers will use this document to improve their teaching and so better attain the key objectives of Seventh-day Adventist education.

Sincerely

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November 1990
First Edition

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SUGGESTIONS FOR USING THE FRAMEWORK

There are many ways to use the framework to help you plan courses, units of work, or topics. The aim is to provide a basic checklist for planning. For topics or units, try the following steps, summarizing your plan on a page or two.

Read the framework overview, philosophy, rationale, and aims on pages 5-9 to gain a picture of the key emphases of your subject.

Check through the list of values and attitudes on pages 10. An example is 'industry'. Select those values that seem to need most emphasis, and write them down.

Check the suggestions about teacher model on page 11. Also, read the values teaching strategies on pages 12-14, ideas about service on page 15, and suggestions about valuing in design on pages 16-18

Read the list of practical life skills on pages 19-21. There are 12 categories, one of which is 'planning'. Record the skills you need.

For ideas about assessment, check page 22. Assessment must be linked with your teaching content, emphasis and methods. Jot down some ideas.

To see how values, learning experiences and teaching methods can be worked into planning, look at the topic and unit summaries on pages 23-25. You can now refine your own summary overview page of your topic or unit.

As you can see, you are required to thoughtfully bring together a number of strands in the planning process. By this stage, the topic or unit is certain to be taking on a values-oriented Adventist Christian perspective.

WHAT IS A FRAMEWORK?

In the Adventist school context, a 'framework' is a statement of values and principles which guide curriculum development. These values and principles are derived from Adventist educational philosophy which states important ideas about what is real, true and good. The objective of the framework is to show how Adventist Christian values and faith can be integrated with academic learning, and it provides some examples of how this can be done. The framework is organized as a resource of ideas for subject planning, so it is intended to be useful rather than exhaustive.

In attempting to present an Adventist perspective, it is clearly understood that some aspects of a course may be taught in similar fashion no matter where it is taught. However at a superficial level the objectives and content of other topics taught in Adventist schools will seem little different from state syllabi merely because the content appears relatively neutral in philosophical terms. With thoughtful teaching there will in fact be differences in content emphasis and approach for these topics, while there will be more noticeable differences in other topics and curriculum processes. These differences of varying degree will stem from the underlying philosophy of the framework.

This industrial technology framework contains: an overview diagram; a philosophy; a rationale; a set of key ideas; aims; suggestions for teaching values; a list of skills; guidelines on assessment; a flowchart to demonstrate unit planning procedure; and appendices which include assessment ideas and a summary of state syllabi.

In the framework there is acceptance of the requirement to teach the basic skills, topics and thematic links outlined in the various state syllabi. The document sets out some of these in checklists and gives practical suggestions which will be used in the preparation of course outlines, programs, units and lessons. It therefore becomes a basic reference point for teachers. No attempt has been made to replace an individual teacher's personal programs, but rather to guide the development of these programs. Overall, the framework mainly attempts to show how good practice can be placed in a value perspective which is Christian. It is a tool teachers can use to help them either reinterpret state curriculum documents from an Adventist perspective, or to simply teach from that perspective if the subject is an elective one.

WHO IS THE FRAMEWORK FOR?

The framework is primarily designed for all industrial technology teachers in Adventist secondary schools. It also provides a reference point for curriculum planning for principals and administrators in the Adventist educational system. Further, it attempts to show state authorities that there is an Adventist curriculum emphasis which provides some justification for the existence of an Adventist school system. The document is to be used in establishing the direction for any curriculum planning, whether it involves creating courses from scratch, adding to state syllabi, or evaluating units and resources.

FRAMEWORK OVERVIEW

A DEFINITION OF INDUSTRIAL TECHNOLOGY IS:	• The study of man's interaction with tools, materials, technology and the environment.
IT IS DEVELOPED THROUGH PURSUING IDEAS WHICH INCLUDE:	• God's creativity is seen in nature • Man is product of God's handiwork • Practical skills help us serve mankind • Pride of work manship is important
IT IS ACHIEVED BY ENABLING STUDENTS TO PURSUE AIMS SUCH AS:	• Practical problem solving • The development of creative abilities through design • The development of personal satisfaction from a task well done • The refinement of organizational skills • The skilful manipulation of tools and materials
IT IS EXPERIENCED BY DEVELOPING ATTITUDES SUCH AS:	• Co-operation • Enthusiasm • Honesty • Responsibility
IT IS DEVELOPED BY PERFORMING SKILLS SUCH AS:	• Construction • Graphics • Mechanics • Problem solving

PHILOSOPHY

The Seventh-day Adventist industrial technology teacher recognises God's word to be ultimate truth, and humans to be the crowning work of His creation. When originally created, humans were placed in a perfect environment and had an inbuilt desire to be cooperative. Separation from God the Creator was sin and its results have become evident both in the environment and in human misery.

Christians who believe that God is involved in restoring the world to its original perfection, should recognise that they have a moral responsibility to do what is possible to improve contemporary society. The Christian ethic of service which focuses on helping others was reaffirmed by Christ and His example dominates the Christian perspective. Honesty, the value of productive labour, quality and pride of workmanship and thoughtfulness for others are vital aspects for education and in particular the industrial technology curriculum.

The industrial technology teacher recognises that God is the Master Creator. He reveals His creativity through nature in the wide variety of materials and with concepts such as texture, form, symmetry, balance and law which governs the harmonious working of creation. The study of these is fundamental in industrial technology.

Although the environment has deteriorated, God still provides humans with the capacity to appreciate beauty in both natural and manufactured objects, and to creatively design and construct articles which will complement the environment and enhance society.

RATIONALE

The fundamental aim of education is to develop knowledge, attitudes and skills which can assist students to understand and shape their environment, and to cope with a rapidly changing technological society. Industrial technology plays an important role in this process by providing students with learning situations in which they can develop the ability to perceive, use, understand and control their environment. This is achieved through action-based education which provides them with the opportunity to become involved with designing, planning, constructing and assessing.

Industrial technology may be defined as man's interaction with tools, materials, processes and the environment for the betterment of humanity. Learning in industrial technology is seen as an active process involving a complex interaction between knowing and doing; action leads to understanding and conversely through understanding the learner is better able to act.

God has endowed all with the ability to think and act as they choose. The study of industrial technology helps students develop the art of thinking in a logical way and act in a responsible manner by presenting them with problems for which they are required to provide practical solutions.

Because the work of redemption and education are closely related, industrial technology is able to play a positive role in directing students to a practical knowledge of God and his purpose for their lives. The work of renewing the image of God in man requires the simultaneous development of the student's spiritual, physical, intellectual and social abilities.

Regardless of students' aspirations, the study of industrial technology provides them with the opportunity to develop knowledge, attitudes and skills which can facilitate their personal growth and provide them with fulfilment through the mastery of challenging tasks. It may also lead them in future years to a more satisfying use of their leisure time, and to productive employment.

KEY IDEAS

A number of important ideas are either stated or implied in the philosophy and rationale of this framework. These ideas should be seen and felt by students as being continually emphasized and demonstrated in the teaching of industrial technology. Although they are stated in different ways in the philosophy, aims and attitudes of this document, they are also listed here in yet another attempt to summarize what is most important for teachers to emphasize in the long-term.

1. Our lives have purpose only as we understand God and accept His redemption. One way to better understand and relate to God is to explore His world of practical design.

2. Because we are a product of God's handiwork, created in His image, we have a need to develop and express our creativity in making practical things.

3. We better understand and appreciate the beauty of God's creation through exercising our creativity.

4. By developing technological skills, we are also developing positive character traits.

5. The activity associated with developing design, planning and construction skills is meant for our benefit and pleasure.

6. We are best prepared for life by being balanced in our physical, mental, social and spiritual activities.

7. As shown in God's creation and life on earth, an important reason for developing practical skills is to serve others.

8. By carefully managing our resources, we learn to be good stewards of the environment God has given us.

9. In order to care for ourselves and others, we develop a sense of safety, and an attitude which values the importance of safety.

10. The design of God's creation shows us the importance of taking pride and care in our tasks.

11. Social development is enhanced through the interaction experiences available as projects are designed, planned and executed.

12. As shown in nature, a clean and orderly work environment promotes efficiency and health.

AIMS

The industrial technology programme seeks to provide students with information and action based experiences designed to help them:

1. Develop an awareness of how God has placed design, structure and beauty in nature.

2. Understand man's relationship to God by exploring, designing and making beautiful or practical objects.

3. Develop creative ability through understanding principles of design.

4. Develop responsibility as stewards in the conservation of God-given resources.

5. Develop and use technology and practical skills in service for others.

6. Cooperate with, relate to, and respect others.

7. Develop action based skills for leisure activities in a balanced lifestyle.

8. Develop self-esteem through the application of decision-making, knowledge and manipulative skills.

9. Develop confidence to attempt a range of practical tasks

10. Develop an awareness of the influence technology has on people and their environment.

11. Develop a positive attitude towards safety.

12. Develop attitudes of perseverence, self discipline and putting forth their best effort.

13 Develop personal satisfaction from a task well done.

14 Develop appreciation for craftsmanship.

15. Develop the skill in presenting and interpreting drawings with a perception of spatial relationships.

16. Develop and refine motor skills.

17. Refine organisational skills through practical problem solving.

18. Develop an ability to critically evaluate materials, design and workmanship of consumer products.

19 Develop the ability to honestly analyse and appraise their achievements.

20. Develop an awareness of career options that are Industrial Technology-oriented.

VALUES

It is expected that each industrial technology student should have developed a group of essential values and positive character traits. Some of these traits and attitudes are listed below as a guide for teachers. Teachers may refer to them when designing assessment activities, and they may emphasize them in the course of instruction. They may also keep jogging their memory of the list so as to keep referring to them when interacting with students on a one-to-one basis.

1. Accuracy
2. Appreciation of the worthwhileness of work
3. Attention to detail
4. Beauty
5. Cleanliness
6. Competence
7. Confidence in handling materials and equipment
8. Cooperation
9. Courtesy
10. Craftsmanship
11. Creativity
12. Empathy for others
13. Enthusiasm in tasks
14. Environmental sensitivity
15. Flexibility, and willingness to become flexible
16. Foresight
17. Honesty
18. Humility
19. Industry
20. Initiative
21. Patience
22. Perseverance
23. Positive attitudes, words and actions
24. Preparedness to become involved in action-based experiences
25. Pride in producing quality work.
26. Punctuality
27. Reliability
28. Resourcefulness
29. Respect for others, things and oneself
30. Responsibility for time, actions and others
31. Safety consciousness
32. Self-discipline
33. Self-esteem
34. Service
35. Stewardship of time and materials
36. Wise decision-making

THE TEACHER AS MODEL

In reference to the teacher as model, the framework endorses the idea that the most effective way to teach values in practical subjects is for teachers to model these values in lifestyle and interaction with students. The use of the following suggestions may help the industrial technology teacher to exhibit the Christian perspective.

1. Take a personal interest in each student's in- and out-of-school activities.

2. Treat students as personal friends and gain their confidence.

3. Be prepared to go the second mile in assisting students.

4. Be unbiased - treat all of students equally.

5. Discover and build on students' best traits.

6. Where possible, encourage students to adopt a sense of mission and service in their tasks.

7. Display a sympathetic attitude to show students you care. Placing your hand on the shoulder at a critical time is one example.

8. Display appropriate posters and blackboard mottos that emphasize Christian values.

9. Keep a clean well ordered workshop. It is a silent statement of your values.

10. Christianity is in part expressed in the attitude of taking care and producing quality in all tasks.

11. Be committed to your school and its administration.

12. Support your local church.

13. Your actions and reactions often say more about your religion than what you verbalize.

STRATEGIES FOR TEACHING VALUES

By demonstrating values in their personal interaction and model, teachers can teach values in many formal and informal ways. Some of the tactics that teachers can use when modelling and encouraging the expression of values are listed below. These tactics in effect help spell out what happens when teachers try to be a good model to students.

Acceptance
Give encouragement to students when their best efforts are less than perfect.

Accuracy
You, the teacher, should set a good example at all times, whether demonstrating to a class or to one student. Expect students to mark and cut out accurately.

Beauty
Surround students with beauty. Examples are plants, trees, models, projects samples of wood grain and polished cross section of tree, posters, etc.

Cleanliness:
Provide a clean working environment for students and encourage them to keep their work benches and surrounding area clean. Provide cleaning facilities for students and staff.

Communication clarity:
Clearly communicate ideas and concepts to students and encourage them to participate in discussions, present ideas to the class, answer questions and use technical terminology.

Competence:
Encourage students to master skills and tasks and so promote efficiency.

Confidence:
Set tasks within the capability of the student. Provide clear instructions and personal help where necessary. Give praise for a job well done and encourage sensitivity and keenness to correct mistakes.

Conservation:
Discourage wastage and acknowledge the value of resources and materials.

Cooperation:
Provide the opportunity for group tasks and encourage students to work with others for others.

Craftsmanship:
Display, demonstrate and encourage quality of workmanship.

Creativity (Ingenuity):
Display creativity and challenge students with good principles of design, encouraging them to design their own projects.

Dignity of labour:
Demonstrate to students that cleaning up is part of the process of producing a project.

Enthusiasm:
Show an enthusiastic attitude towards your subject.

Flexibility:
Be willing to adopt other people's views and methods of solving a problem.

Following instructions:
Encourage students to adhere to precise instructions.

Honesty:
Demonstrate honesty in word, action, use of time and materials. Expect and reward honesty from students.

Humility:
Demonstrate humility by being prepared to recognise and admit your own mistakes and failures.

Industry/Productivity:
Motivate and expect students to complete all projects; provide guidance so that projects are within their ability range.

Initiative:
Give students general instructions and encourage them to devise their own specific program for accomplishing the task.

Involvement:
Be totally involved with class room activities and expect the same from students.

Orderliness:
Provide a place for everything and expect it to be returned to the designated place.

Patience:
Be prepared to explain a procedure or concept a number of times for a slow learner.

Planning :
Show students how to design a job sequence project and work out a materials list.

Positiveness:
Be an optimist and do not dwell on negative issues.

Pride in workmanship:
Challenge students to do their very best and give praise when they perform well.

Punctuality:
Always be on time for class and expect the same of students. Plan for deadlines such as project completion times.

Resourcefulness:
Use what is available and adapt to suit the need. There is always more than one method of achieving a goal, so be prepared to explore and find the most appropriate way.

Respect for the rights of others:
Encourage students to adopt a positive attitude towards the rights of other members of the class. For example a high standard of behaviour in the workshop reduces the likelihood of accidents.

Respect for others' property
Encourage students to treat the property of others as they would have others treat theirs.

Responsibility:
Explain to the students that with the privilege of being able to use equipment comes the responsibility for looking after it when using it and returning it to its correct place when finished with it.

Safety:
Set the example of always providing a safe working environment for students.

Self-discipline:
Encourage students to practice self-control; accept difficulties and mistakes as part of the learning process.

Self-respect:
Show students you value them and their positive contributions to the class.

Sensitivity:
Encourage the underachiever and discourage peer group criticism.

DEVELOPING SERVICE AWARENESS IN STUDENTS

The end point of the valuing process is action, and for the Christian this is 'service'. It is important that students have opportunities to affirm their values and act them out in their families, within the school and in their communities. In the practical arts, an ideal framework for such action is a scheme that provides opportunities for service in a range of useful and tangible ways. Some suggested ways to develop the idea of service in the practical arts are set out below.

1. Continually direct students to service for others rather than activities that focus on themselves.

2. Use and practise practical skills for filling community needs.

3. Help the less talented to achieve acceptable results in the workshop.

4. Expose students firsthand to community needs. Start by recognizing the problems, perceiving how the 'other half lives', and by asking questions such as:

   a. What skills do we have ?
   b. What skills will we need?
   c. How can the skills be imparted to others to make them self-sufficient.

5. Work together to solve problems of those in need. Examples include the following ideas:

   a. Care In The School:

   Devise ways to make the school more 'caring'.

   b. Children's Homes Assistance:

   Run parties, make toys using different materials, design and construct play equipment.

   c. Departments In the School:

   Involve all of the departments of the school to take part in outreach programs.

   d. Handicapped or Aged Within the Community:

   Design and construct devices and means to enhance the quality of life. (Wheelchairs, mobile stands, modified containers, trolleys, etc.)

   e. Disabled People:

   Bring them to school to assist learning through games and hobbies. Take them for drives or walks.

   h. Local Churches Assistance:

   Become involved in welfare programmes in both S.D.A. and non S.D.A. churches.

VALUING IN THE DESIGN PROCESS

On the opposite page is a model of the design process in industrial technology. The model shows how that the various elements of design such as planning, testing and analysis are each associated with their own design process. An element of design which is repeated at each step is evaluation because there must be constant references to the objectives of the design brief in relation to each stage of the process.

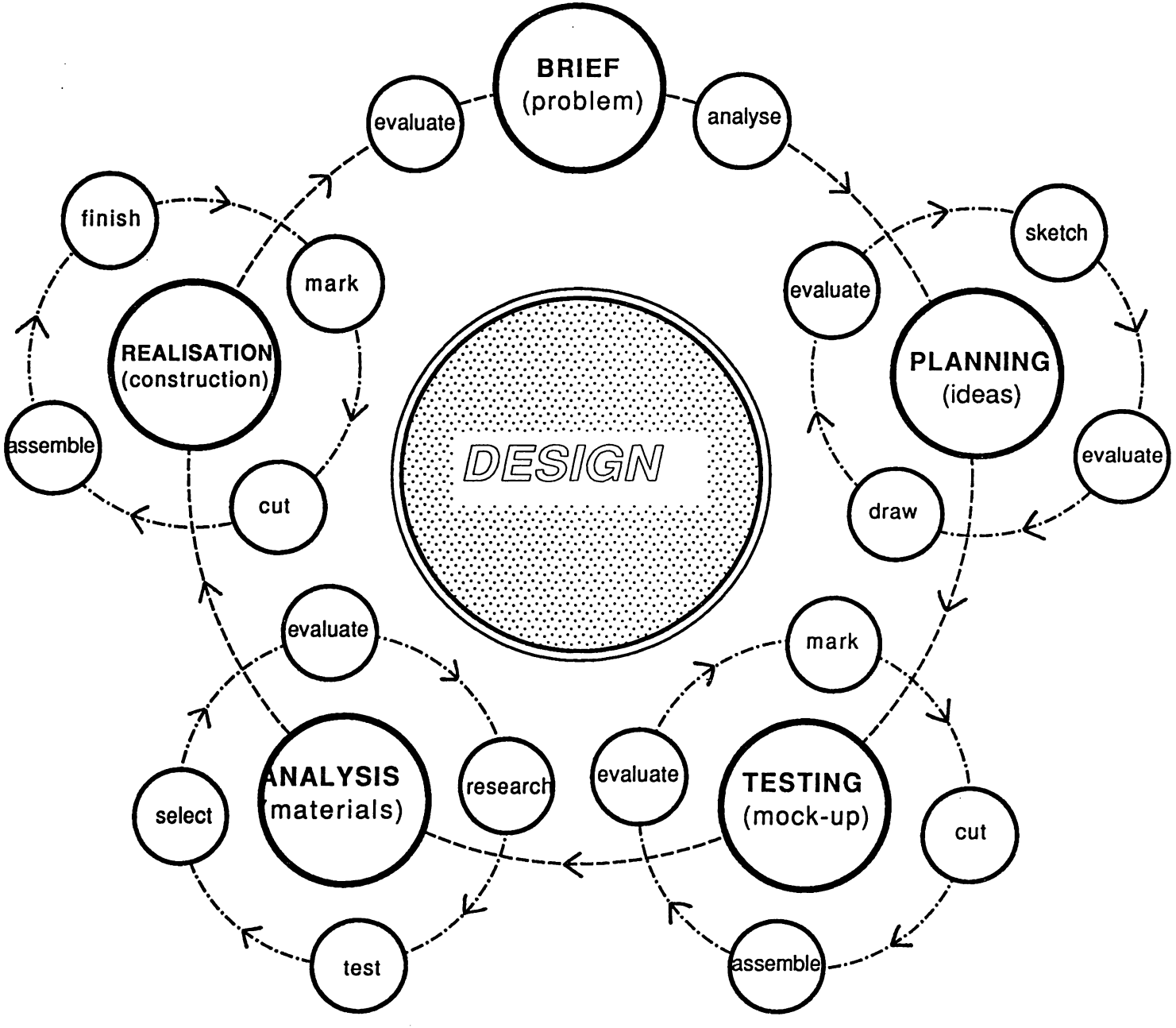
Although the model appears to flow in a sequence, shown by the arrows pointing in a clockwise direction, students working at later stages of the process may return to planning, consulting the brief, testing etc at any time. For example, after testing it may be necessary to return to planning to incorporate some necessary idea that was not anticipated.

The valuing and design processes are intertwined naturally and constantly throughout the creative teaching of industrial technology.

Values such as those listed in this framework enter the design process at every step. Some value-oriented attributes such as wise decision-making, industry, and flexibility may be desirable at all stages of the process. Other groups of values may be more easily emphasized at particular phases of the process. For example, originality, initiative, and foresight are particularly important at the planning stage of the process. Industry, stewardship of resources, cleanliness, confidence and craftsmanship may be more important at the realization (construction) stage. Overall, a group of important values will always be modelled, insisted on, encouraged, worked into procedures, and demonstrated in the design process.

It may not be possible to plan on paper exactly how and when particular values are emphasized. However, as suggested by the following topic summaries, teachers can think about the valuing process when planning units. They may consider a few values to consciously emphasize for some projects, kinds of value judgements to be made, decisions to be made, and ways to use the design process to be of service in the school and community. The teacher's personal model is the most important value teaching strategy of all.

A MODEL OF THE DESIGN PROCESS



PROBLEM SOLVING IN DESIGN

One of the teaching methods which is currently emphasized in industrial technology teaching is problem solving. Such an emphasis recognizes that this process is a necessary part of the creative design process.

Problem solving is not always necessarily taught as a planned teaching strategy. Teachers must remain aware that in many situations individual student problems are in fact opportunities for new learning experiences. However, planned problem solving exercises must also be incorporated in the program in scaled, 'simple to complex' learning experiences.

Problem solving is the framework upon which design education is built within a structured project. This may begin as design options which include, for example, material, shape and finish. However, the ultimate problem solving exercises will involve the student in orchestrating all areas of design.

Some strategies for teaching problem solving are:

- Answer a question from a student with a question.
- Encourage decisions.
- Be slow to condemn.
- Make students responsible for their own decisions.
- Encourage forward planning.
- Encourage problem sharing.
- Encourage and reward originality.
- Provide a stimulating environment where resource materials are readily available.

Problem solving in the workshop can be readily translated into both spiritual and secular real-life situations.

A MODEL FOR PROBLEM SOLVING

A student should be able to:

- Make a clear statement of a problem.
- Make a brief statement of how a problem **might be solved.**
- Collect information related to a problem.
- Consider a number of ways in which a problem could be solved using collected information.
- Consider the best ideas in detail and develop a working drawing or statement which solves a problem.
- Check the idea through a mock up or trial.
- Complete the project.
- Evaluate the solution to the problem.

PRACTICAL LIFE SKILLS

Because of its commitment to balance in education, this framework emphasizes the idea that students should become familiar with a broad range of practical skill types. The twelve categories set out below attempt to capture the idea of balance as it relates not only to industrial technology, but to the practical arts as a larger group of subjects. On the next page of this document the skill groups are set out alphabetically. On the following page there is a figure which shows how the skill categories may be related to each other, and to the intent of this framework.

EVALUATION Material testing Product testing Selecting	**COMMUNICATION** Communication Computer literacy Literacy Numeracy	**PLANNING** Landscaping Organizational Planning Career awareness and choice
PROBLEM SOLVING Problem recognition Research Design Choice of materials	**AESTHETICS** Art Wood Art Metal Photographics Ceramics	**MECHANICS** Car maintenance Small motor maintenance Bicylce maintenance Mechanisms Power mechanics
THINKING Critical thinking Study skills Positive workshop attitude Research Analysis Sequencing Evaluation	**RELATIONSHIPS** Co-operation Group participation Leadership Sharing Tactfulness Team designing Self discipline Recognizing others's needs	**SAFETY** Safety with chemicals Safety with electricity Safety in the home Safety with hand tools Safety precautions in first aid Safety with machines Personal safety practices Safety in transport Awareness of potential dangers Workshop house keeping
GRAPHICS Architectural C.A.D. Cabinet Engineering Folded sheet Geometry Illustration Landscape Pictorial Product	**CONSTRUCTION** Construction Electrics Fabrication Finishing Foundry Furniture making Machine Power tools Turning Upholstery Welding Aerodynamics Working plastics	**HOME** Baking Catering Gardening Garment care Garment construction Ground keeping Home care Home crafts Home maintenance carpentry Home maintenance electrical Home maintenance plaster/paint Home maintenace plumbing Nutritional Personal care

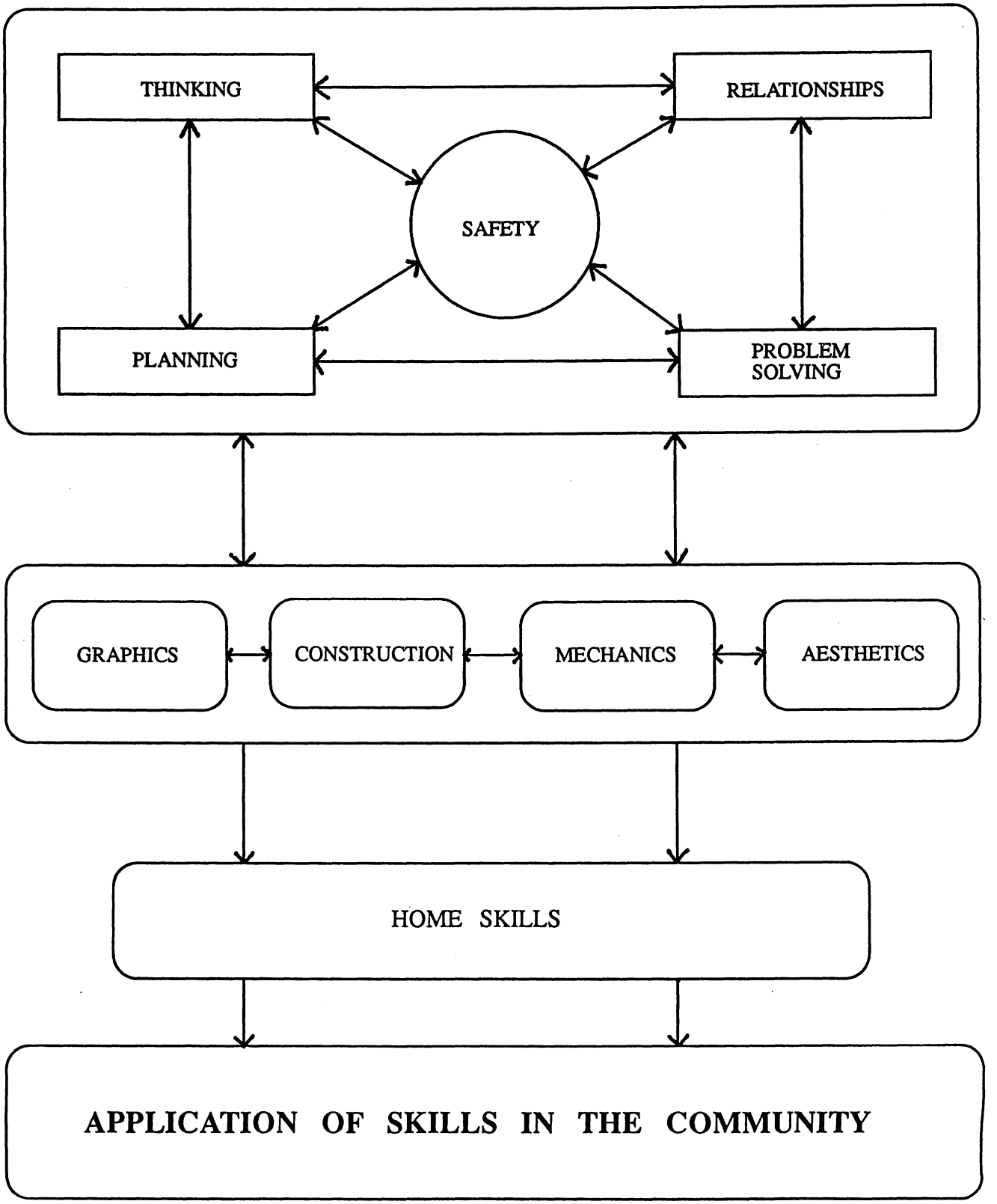
SKILL AREAS

Aerodynamics
Art Metal
Art Wood
Baking
Bicycle Maintenance
Car Maintenance
Career Awareness
Catering
Ceramics
Choice of materials
Co-operation
Communication
Computer Literacy
Construction
Critical Thinking
Design
Electrics
Evaluation
Fabrication
Finishing
Foundry
Furniture Making
Gardening
Garment Care
Garment Construction
Graphics Architectural
Graphics C.A.D.
Graphics Cabinet
Graphics Engineering
Graphics Folded Sheet
Graphics Geometry
Graphics Illustration
Graphics Landscape
Graphics Pictorial
Graphics Product
Ground Keeping
Group Participation
Home Care
Home Crafts
Home Maintenance:

- Carpentry
- Concrete/Brick
- Electrical
- Plaster/Paint
- Plumbing

Landscaping
Leadership
Literacy
Machine
Material Testing
Mechanisms
Numeracy
Nutritional
Organizational
Personal Care
Photographics
Planning
Positive Workshop Attitude
Power Mechanics
Power Tools
Problem Recognition
Product Testing
Recognizing Others Needs
Research
Safety with Chemicals
Safety with Electrical Appliances
Safety Precautions in First Aid
Safety with Hand Tools
Safety in the Home
Safety with Machines
Personal safety practices
Safety with Transport
Selecting
Self Discipline
Sequencing
Sharing
Small Motor Maintenance
Study Skills
Tactfulness
Team Designing
Turning
Upholstery
Welding
Working Plastics
Workshop Attitude
Workshop House Keeping

GROUPING AND RELATING PRACTICAL SKILLS AREAS IN SDA SCHOOLS



ASSESSMENT GUIDELINES

Effective assessment guidelines are provided in various state syllabi. The guidelines listed below are to merely remind teachers of the basic elements they should include in assessment.

1. It is imperative that all the essential elements of the course be included at the course planning stage. To ensure that the course has been covered systematically, it is helpful to use a correlation chart in which skills or content are checked off in relation to lobes of course work. See Appendix 1 for an example of a matrix.

2. When setting projects, it is essential to outline the assessment procedure and supply a marking scheme for students so that they will be aware of what is expected of them and be able to direct their efforts accordingly. See Appendix 1 for an example.

3. It is suggested that when marking projects it be done at different stages throughout construction. In this manner, the accumulation of marks will help students profit from errors and change work attitudes. While marking the project at completion does assess the different aspects of the task, sometimes the students are able to conceal errors in the finishing process.

4. When marks are being alloted at the completion of each stage of the project, it is advisable to use percentages to prevent a 'bunching up' of marks occuring.

5. It is important to provide students with as much feedback as possible, both during and after the construction of the project. In this way it is possible for them to improve their performance. While students can benefit from talking with teachers concerning assessment, such discussions can help teachers by eliminating excessive written comments.

6. Teachers must ensure that they assess all of the objectives of the course. A variety of tactics may be employed to assess attitudes, some of which are listed :

    - Rating scales without marks;
    - Rating scales with marks;
    - An overall attitude mark.

    Ratings may be both written or oral, and they may include work attitudes. See Appendix 1 for examples of attitudes rating scales.

7. Teachers should make sure that the marks weighting for a project adequately reflects the amount of time and effort expended. Not all projects will receive the same mark in an overall assessment scheme.

TOPIC AND UNIT SUMMARIES

On the following three pages there are two summaries which show two approaches to planning topics or units. Both include the valuing process in teaching. The first approach centres around the design process, and the second shows a flow chart of a unit of work.

GRAPHICS

SCHOOL SIGNS

Brief

Study the various departments and areas within your school and design a method which would enable all person regardless of language to be able to follow directions and find their way around the school.

Analyse Brief

Study school administrative structure, and work ou the various areas in the school etc.

Testing

Make full-size mockup, test in place for size clarity etc, and check with teacher.

Material Analysis

Research in suitable material that is weatherable, workable, has durability and is inexpensive.

Realization

Construction, measuring, cutting, and finishing etc.

Evaluate

Put in place, observe response, do a written report with modifications etc.

The Valuing Component

Kinds of Value Judgements:

- Environmental impact of sign design and placement
- The adequacy of the present system
- The aesthetic appeal of signs (affectiveness of logo shape etc)
- The worth of clear signposting for the school

Kinds of Decisions and Choices:

- Group procedures etc
- Material selection
- Sign design (aesthetic and logical appeal)
- Sign placement and numbers
- Survey respondents

Values Emphasized:

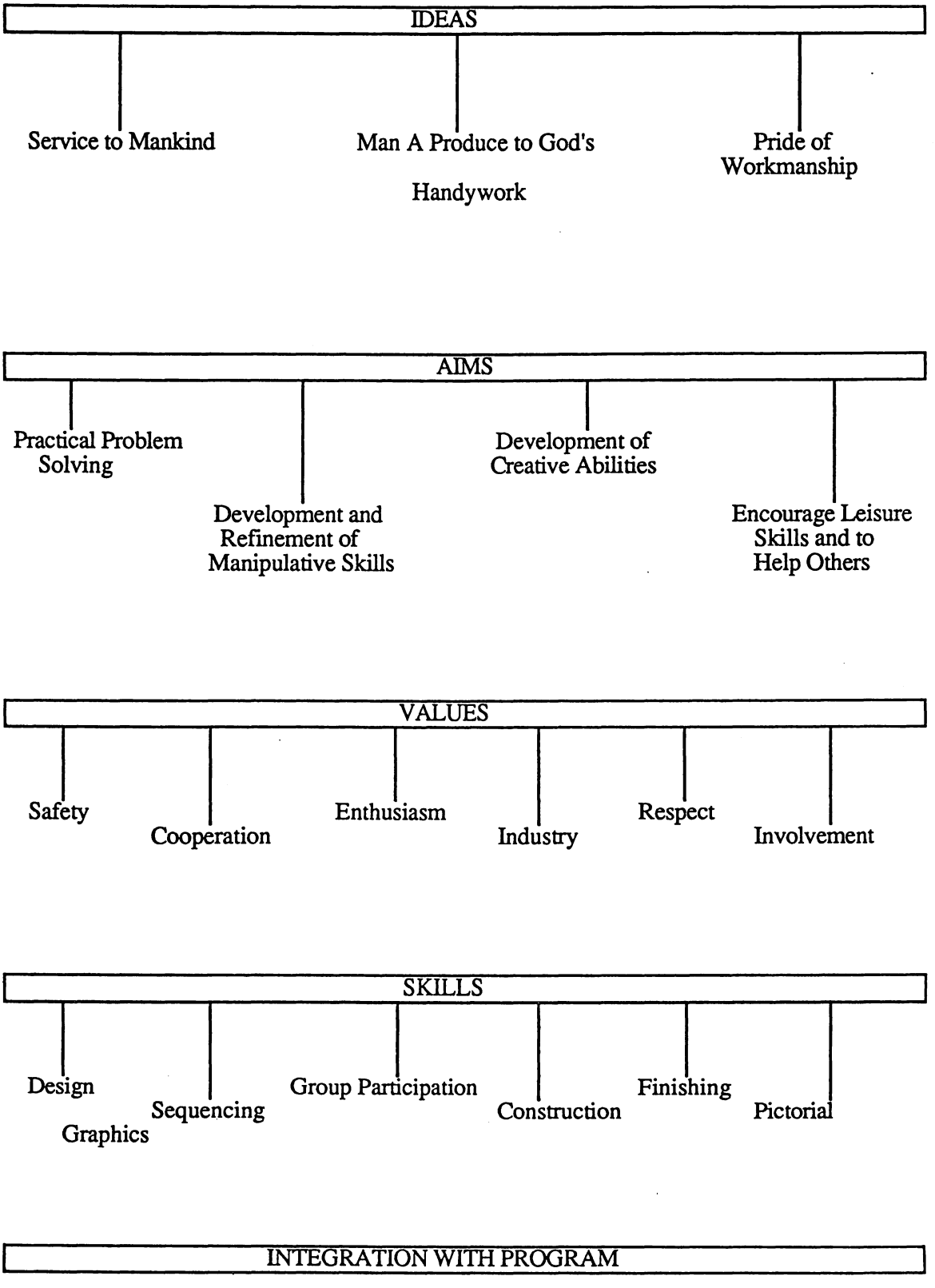
- Empathy
- Environmental sensitivity

Possible Service to Others:

- Directing visitors, students and staff around the school
- Finding the needs of ethnic groups and disadvantaged

A UNIT OF WORK

TOY MAKING



APPENDIX I

SAMPLE

ASSESSMENT

FORMS

STUDENT ATTITUDE ASSESSMENT SHEET					
Attitudes	**1**	**2**	**3**	**4**	**Comments**
Responsibility					
Cooperation					
Interest/Enthusiasm					
Safety					
Diligence, Effort and Perseverance					
Initiative, Adaptability and Versatility					
Pursuit of Excellence					
Sensitivity					

1 Excellent
2 Very Good
3 Satisfactory
4 Unsatisfactory

Teacher's Comments:

Date: _____ Teacher's Signature _____

++ TECHNICS PROJECT SHEET ++

LOBE ...TECHNOLOGY 1 .....

MODEL ...HACKSAW.....

STUDENT NAME .....

MATERIALS:

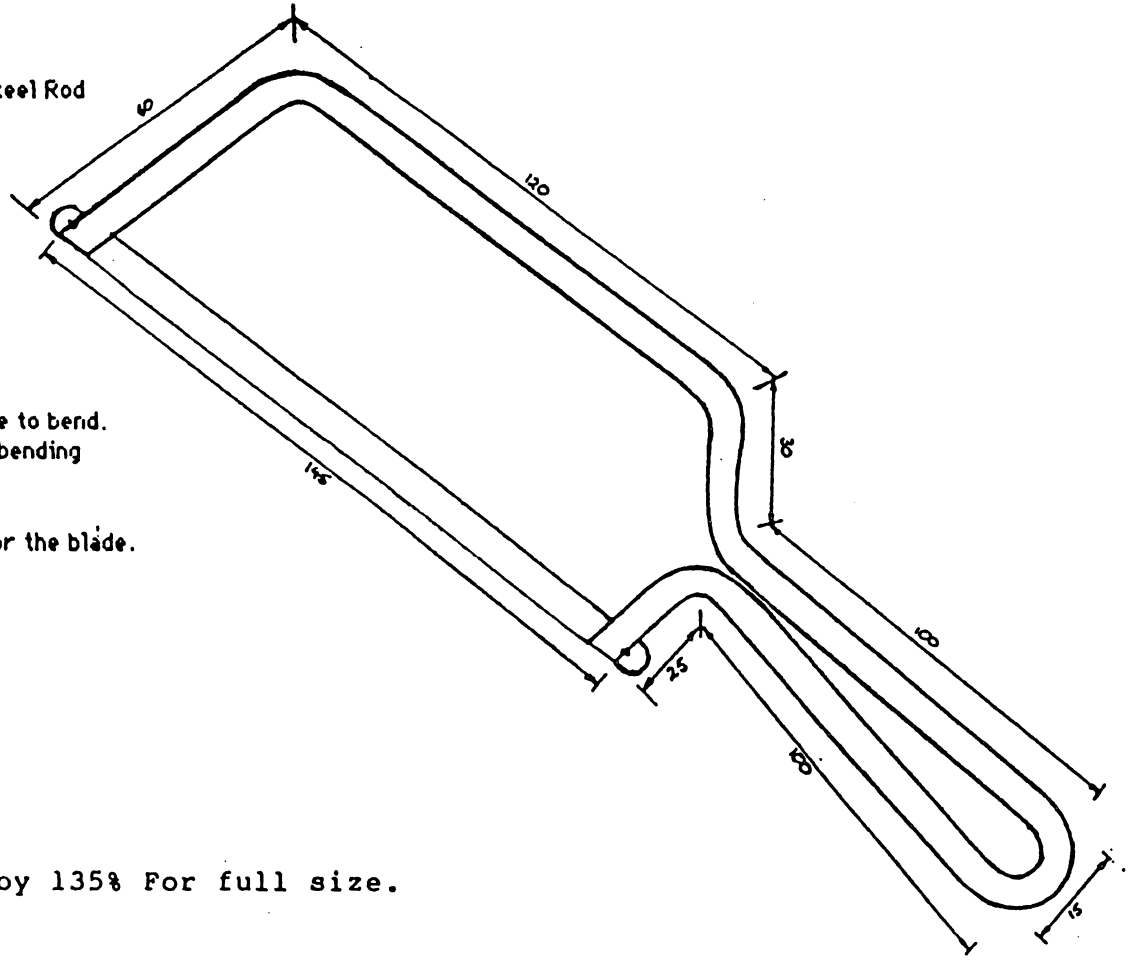
450 mm of 6 mm Mild Steel Rod

MACHINES:

Oxy Torch

PROCEDURE:

1. Cut 450 mm off rod.
2. Mark from plan where to bend.
3. Bend by heating then bending a metal rod.
4. Allow to cool.
5. Cut slots and stops for the blade.
6. Finish.



Enlarge by 135% For full size.

EVALUATION

Safety	✓ / X
Cutting	/20
Bending	/30
Coating	/20
Practicality	/30
TOTAL	/100

COURSE CONTENT	LOBE POWER MECHANICS				PROJECTS				
	PRACTICAL	ELEMENTARY	INDEPTH	OPTIONAL	POW. SOURCES	RES. ASSIGN	2/4 STROKE	TUNEUP.	FLOOR TROLL.
Graphical Communication									
- sources of technical information	*		*		*	*	*		
- workshop manuals - disassembly	*		*						
- inspection									
- assembly									
- reading a drawing - exploded assembly	*	*					*	*	*
- parts lists	*						*		*
- freehand sketching - components and assemblies	*	*					*		
Safety - workshop procedures			*		*		*		
- hand tools			*		*		*		
- solvents			*		*		*		
- protective equipment			*		*		*		
- fire			*		*		*		
Define Power Mechanics		*			*				
Power Sources									
- man, animal, water, wind		*			*				
- electrical, atomic, solar, geothermal		*			*				
- heat engines - internal combustion		*			*				
2 stroke									
4 stroke									
diesel									
rotary									
turbine									
- external combustion		*			*				
steam									
History and development of each power source		*			*	*			
Detailed study of one power source other than the internal combustion engine eg wind, steam electrical .	*		*			*			

APPENDIX II

STATE SYLLABI

A COMPARISON OF INDUSTRIAL TECHNOLOGY SYLLABI

The following chart is a comparative analysis of Australian and New Zealand industrial technology syllabi.

Section one identifies material covered in the first years of junior high school, while the second section defines in detail the range of options available to Year 9 and 10 students.

The distinguishing feature of the chart that differentiates courses from modules and lobes is the rectangular box which enscribes the course name. Lobes and modules have no such box enclosing them.

Because of its scope the New South Wales Industrial Technology Syllabus was used as the benchmark for comparing all other syllabi. For example Queensland's Shop A course covers similar work to that of the NSW Technics Syllabus lobes of General Wood, Wood Machining, Cabinet Work and Plastics. Victoria's Technology Studies and New Zealand's Workshop Technology courses can cover almost all of the NSW Technics lobes as well as material from the NSW Technical Drawing Syllabus. While it is recognised that each syllabus has its own distinct bias, it is hoped that with this information industrial technology teachers will be favourably disposed to contact their colleagues and glean material from them which they can use in strengthening their programs.

	QUEENSLAND	NEW SOUTH WALES	SOUTH AUSTRALIA	TASMANIA	WEST AUSTRALIA	VICTORIA	NEW ZEALAND
	MANUAL ARTS	TECHNICS	TECHNICAL STUDIES	TECHNOLOGY	MANUAL ARTS	TECHNOLOGY STUDIES	WORKSHOP TECHNOLOGY
Years 7 & 8	Introductory work from all subjects listed below.	Technology 1 and introductory lobes chosen from the lobes below.	Any introductory work chosen from modules listed below.	Introductory work from subjects below.	Any introductory work (stage) from subjects below.	Any introductory work from areas within the course.	Any introductory work from areas within the course.