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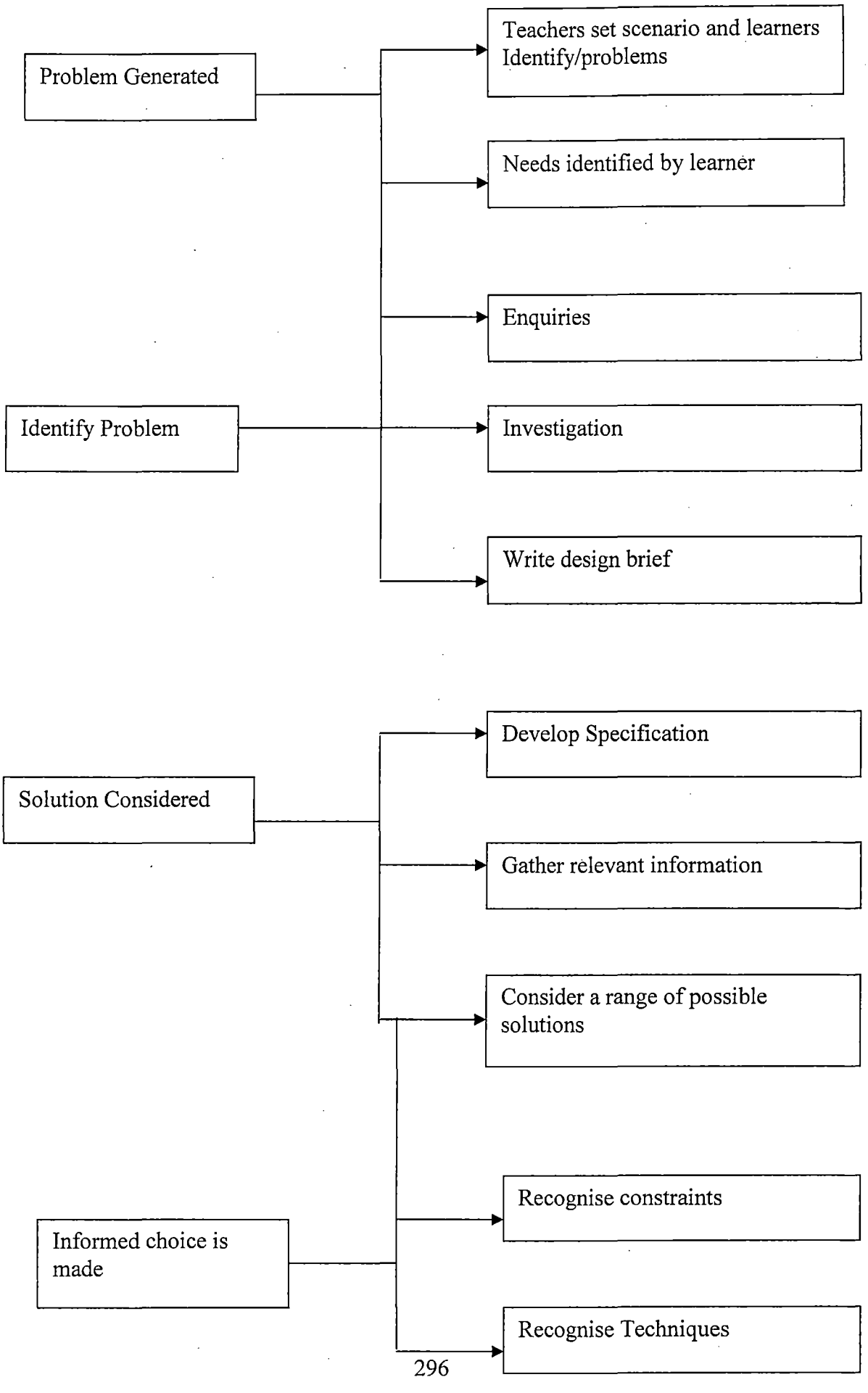
ANNEXURE 1


Problem Generated
Teachers set scenario and learners Identify/problems
Needs identified by learner
Identify Problem
Enquiries
Investigation
Write design brief
Solution Considered
Develop Specification
Gather relevant information
Consider a range of possible solutions
Informed choice is made
Recognise constraints
Recognise Techniques

ANNEXURE 1

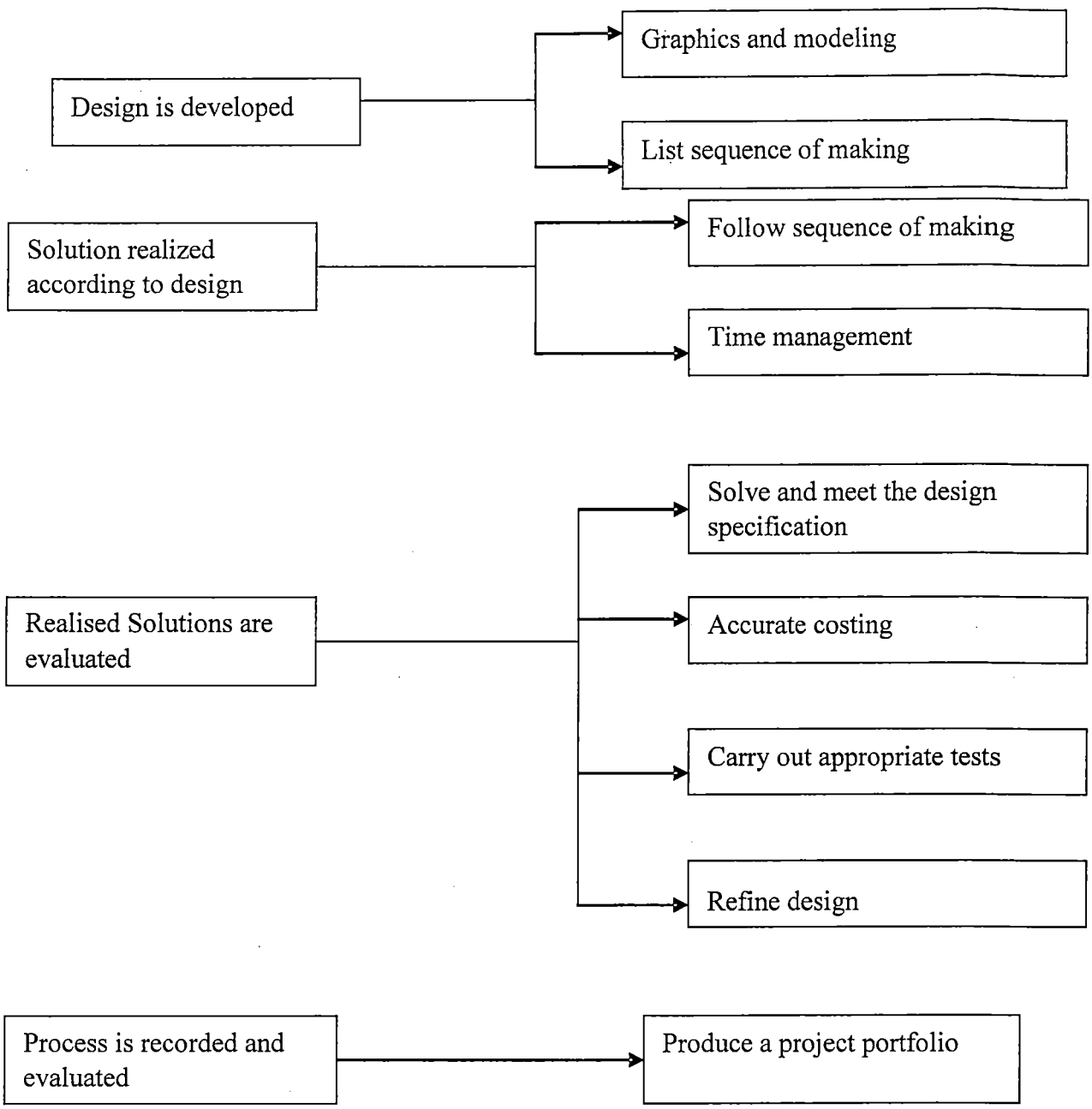


Figure1. 4, The Technological process as proposed by Davids, N (1997:12)

ANNEXURE 2

Name: _____ **Grade:**

Assessment for Technology Product and Portfolio		
The Portfolio		
Initial ideas: Investigation (5) (0) No evidence of research given (1-2) Minimal research conducted (3-4) A reasonable amount of research evident but may not be entirely relevant (5) Highly relevant and concise research provided		
Initial idea: Designs: (10) (0) No evidence of any form of graphics (1-3) Very elementary graphics used and too few labels (4-5) Limited use of graphics but has communicated some ideas (6-8) Good application of graphic skills and clearly labelled (9-10) Effective use of graphics & labels displaying a clear grasp of the skills needed		
Evaluation of Initial Ideas: (5) (0) No evaluation of initial ideas carried out (1-2) Limited evaluation provided, no clear explanation for choice of product (3-4) A reasonable evaluation but could be improved upon (5) Well explained & justified reason for choice of product to be made		
Optimal Solution - Graphics (Drawings): (10) (0) No evidence of any form of graphics (1-2) Very elementary graphics used and too little (3-6) Limited use of graphics but has communicated some ideas (7-9) Good application of graphic skills (10) Effective use of graphics displaying a clear grasp of the skills needed		
Optimal Solution - Creativity: (10) (0) No creativity and no attempt to solve the problem given (1-2) Shows a basic understanding but lacks the ability to come up with an original idea (3-6) Displays an average creativity (7-9) Shows potential but needs a bit of refinement (10) Totally original & creative solution to the problem		
Tools & Material list: (5) (0) No lists given (1-2) An inaccurate tool or material list given only (3-4) Limited lists, does not contain all materials used on product (5) Detailed, accurate tools & materials lists		
Planning of making (Production Plan) (5) (0) No production plan given (1-2) Shows basic, simple production plan (3) Has an average production plan, some graphics or instructions (4) Shows potential but needs a bit of refinement, has some graphics & / or instructions (5) Excellent stages of production both graphically and written instructions		
Evaluation of product: (5) (0) No evaluation carried out (1-2) Limited evaluation provided but unclear explanation (3-4) A reasonable evaluation but could be improved upon, needs more detail or is one		

sided (5) Accurate, well-balanced evaluation		
Testing of product: (5) (0) No testing carried out (1-2) Limited testing carried out, very brief explanation (3-4) A reasonable evaluation but needs more detail or is one sided (5) Accurate, well-balanced test explanation: explains the test/s & the results of the test		
Conclusion: (5) (0) No conclusion presented (1-2) Limited conclusion provided but unclear explanation (3-4) A reasonable conclusion but could be improved upon, needs more detail or is one sided (5) Accurate, well-balanced conclusion		
Presentation of portfolio: (10) (1-2) A very poor attempt at an incomplete presentation (3-5) Very little effort has been put into making it presentable (6-8) A reasonable presentation but could be improved upon with a little more effort (9-10) An outstanding presentation bearing in mind the skills provided by the teacher		
The Final Product: Relationship to working drawing (5) (0) No final product given (1-2) The final product bears very little relationship to the working drawings (3-4) A reasonable relationship but there are some difference that are not reflected in the drawings (5) A direct correlation between the final product and the working drawings		
Workmanship (10) (0) No final product supplied (1-3) Very elementary skills were used in making the final product (4-7) A reasonable proficiency of skills displayed, could improve (8-9) A neat well presented product (5) Outstanding skills displayed, exceptional product		
Functionality (5) (0) The final product is non-functional (1-2) The final product is barely functional (3-4) The final product can be used in its intended role but could be improved upon (5) A highly functional final product		
Overall impression of portfolio and product (5) Teacher's Comment:		
Total: **(100 Marks)**		

Table 2.6: Assessment of Technology Product and Portfolio after Walstra (1997:32)

Department of Education
Lefapha la Thuto
Departement van Onderwys

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QUALITY ASSURANCE CHIEF DIRECTORATE

Enquiries: J.A.T. Tholo
Tel No.: 018 397 3092
Fax No.: 018 384 9249
Email Address:JTholo@nwpg.gov.za

4 December 2005

Attention: Mr A. Seakamela
The Deputy Director General
Department of education
Private bag x 2044
MMABATHO
2735

SUBJECT: REQUEST TO CONDUCT RESEARCH IN YOUR SCHOOLS

Thank you very much for this opportunity to write this letter to you. I am registered with the North West University (Mafikeng campus) as a doctoral student in curriculum development. My research proposal has been approved by the Research and Publications Committee of the said University. I am humbly approaching your office requesting for permission to collect data in schools as part of my research study.

My supervisor is Dr R.J. Monobe and the research topic is: An approach for the implementation of technology education in schools in the North West Province. I wish to collect data in January 2006.

I believe my request will reach your most favourable consideration and wish to thank you in anticipation.

Yours sincerely

J.A.T. Tholo

ANNEXURE 4

NORTH WEST PROVINCE

Department of Education
Lefapha la Thuto
Departement van Onderwys

1st Floor Garona Building
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E-mail:
Motswenyaner@nwpg.gov.za

OFFICE OF THE DEPUTY DIRECTOR GENERAL

To: **Mr J.A.T.Tholo**
Chief Education Specialist
Quality Assurance Chief Directorate

From: **Mr M.A. Seakamela**
Deputy Director General
North West Education Department

Date: **12th December 2005**

Subject: **REQUEST FOR PERMISSION TO CONDUCT AN EMPIRICAL INVESTIGATION**

Permission is granted for you to conduct an empirical investigation in schools subject to the following:

- That your involvement with schools will not disrupt the operations of the schools selected
- That proper consultations will be made with the management of sampled schools
- That the department will be favoured with the report of the investigation

The department wishes to take this opportunity to wish you well in your studies. We believe that your research will enhance our understanding of the schooling system.

Hope you find this in order

Sincerely

.....

M.A. SEAKAMELA (Mr)
DEPUTY DIRECTOR GENERAL

Cc Acting Superintendent General
Mr H.M.Mweli
Executive Manager (Quality Assurance)
Dr I S Molale

ANNEXURE 5

QUESTIONNAIRE FOR TECHNOLOGY EDUCATORS: COVER PAGE

Dear Colleague

My name is Thabo Tholo. I am a doctoral student enrolled with the North West University (Mafikeng Campus). My supervisor is Dr R.J. Monobe. I am conducting a research on Technology Education implementation in senior phase schools in the North West Province. The aim of the questionnaire is to collect data to address the following research objectives:

- To document the profile of educators involved in technology education as well as determining In-service Education and Training (INSET) and other forms of support they receive.
- To determine educators' attitudes towards the implementation of Technology as a learning area in schools and
- To determine available technology resources in schools

You and your school have been randomly selected to participate by responding to the attached questionnaire. I humbly request you to respond with sincerity so that the findings of the study can be genuine. It will take you between 30 and 40 minutes to respond to the questionnaire.

The principle of anonymity will be maintained, so you need not write your name on the questionnaire. It is also important that once you have responded on the questionnaire, hand it over to the principal. The researcher will collect it from him/her.

The abstract as well as the findings will be made available to you on request.

Thabo Tholo
Mobile Phone: 0832074169
E-mail: JTholo@nwpg.gov.za

ANNEXURE 5

QUESTIONNAIRE FOR TECHNOLOGYEDUCATORS

Questionnaire number 1 2 3 ☐☐☐

For office use only

SECTION A : BIOGRAPHICAL AND DEMOGRAPHIC DATA

Please complete the following by marking with an "X".

1. Gender

Male		1
Female		

V1 ☐ 1-2

2. Age

Below 25 years		2
26 - 30 years		
31 - 40 years		
Above 40 years		

V2 ☐ 1-4

3. Teaching experience

1-5 yrs		3
5-10 yrs		
11-15 yrs		
Above 16 yrs		

V3 ☐ 1-4

4. Experience in Teaching Technology

1-5 yrs		4
5-10 yrs		
11-15 yrs		
Above 16 yrs		

V4 ☐ 1-4

ANNEXURE 5

For office use only	
V5	1-6
V6	1-6
V7	1-4
V8	1-4
V9	1-2

5. **Highest education level**

Teachers' certificate	
Diploma	
Bachelor's degree	
Hons/Bed. Degree	
Masters degree	
Doctorate	

5

6. **Highest Educational level in Technology**

Less than one year of teacher training	
One year of teacher training	
Two years of teacher training	
Three years of teacher training	
More than three years of teacher training	
None	

6

7. **Position Held**

Principal	
Deputy Principal	
Head of Department	
Educator	

7

8. **School Category**

Primary school	
Middle school	
High school	
Combined school	

8

9. **Type of settlement**

Rural	
Urban	

9

ANNEXURE 5

SECTION B: SUPPORT RECEIVED BY TECHNOLOGY EDUCATORS

This Section is aimed at determining the level of support received by Technology Educators. Please tick a cross on one box only.

For office use only

10. How many hours of curriculum related in-service training have you received?

10.1. Less than 80 hours	☐	10	V10 ☐ 1
10.2. 80 hours	☐	11	V11 ☐ 2
10.3. More than 80 hours	☐	12	V12 ☐ 3
10.4. None	☐	13	V13 ☐ 4

11. What kind of recognition did you receive from curriculum-related in-service training?

11.1 Attendance certificate	☐	14	V14 ☐ 1
11.2. Credits for further study	☐	15	V15 ☐ 2
11.3 No recognition	☐	16	V16 ☐ 3
11.4 Have not attended any in-service training	☐	17	V17 ☐ 4

12. Do you have access to the following services?

12.1 Teacher Resource Centre	Yes / No	18	V18 ☐ 1-2
12.2 Library	Yes / No	19	V19 ☐ 1-2
12.3 Internet	Yes / No	20	V20 ☐ 1-2
13. Are educators trained in health and Safety practices regarding practical Work?	Yes / No	21	V21 ☐ 1-2

ANNEXURE 5

For office use only

14. Do you approach industry and commerce for help with technical problems, materials and work experience?

Yes	No	
		22

V22 ☐ 1-2

15. How often does the School Management Team provide support towards effective teaching and learning in your class?

15.1 Always ☐ 23 — V23 ☐ 1

15.2 Most of the time ☐ 24 — V24 ☐ 2

15.3. Sometimes ☐ 25 — V25 ☐ 3

15.4 Never ☐ 26 — V26 ☐ 4

16. What is the total time per week allocated to teach Technology in your school?

16.1 Less than 2 hours ☐ 27 — V27 ☐ 1

16.2 2 hours ☐ 28 — V28 ☐ 2

16.3. More than 2 hours ☐ 29 — V29 ☐ 3

17. How often do meetings related to your professional work take place between yourself and the following stakeholders?

	Always	Most of the time	Sometimes	Never		
17.1 Curriculum planners	☐	☐	☐	☐	30	V30 ☐ 1-4
17.2 Principal	☐	☐	☐	☐	31	V31 ☐ 1-4
17.3 Parents	☐	☐	☐	☐	32	V32 ☐ 1-4
17.4 Fellow teachers	☐	☐	☐	☐	33	V33 ☐ 1-4
17.5 SGB	☐	☐	☐	☐	34	V34 ☐ 1-4
17.6 SMT	☐	☐	☐	☐	35	V35 ☐ 1-4

ANNEXURE 5

For office use only

18. What was the purpose of the departmental official's visit to your school?

18.1 Simple dropping for a coffee and a chat	Yes / No	36	V36 ☐	1-2
18.2. To deliver material	Yes / No	37	V37 ☐	1-2
18.3. To complete an observation form	Yes / No	38	V38 ☐	1-2
18.4. To attend to problems relating to Tech	Yes / No	39	V39 ☐	1-2
18.5. To discuss learner's work with educator	Yes / No	40	V40 ☐	1-2
18.6. To attend a parents meeting	Yes / No	42	V41 ☐	1-2
18.7. To discuss learners' problems with the principal	Yes / No	43	V42 ☐	1-2
			V43 ☐	1-2

19. What is your feeling regarding INSET courses you received for Technology Education?

19.1 The training was well organized	Yes / No	44	V44 ☐	1-2
19.2 The trainers presented training material with great expertise	Yes / No	45	V45 ☐	1-2
19.3 The training did not give me confidence with the use of tools	Yes / No	46	V46 ☐	1-2
19.4 The training was boring	Yes / No	47	V47 ☐	1-2
19.5. The training provided in-depth information on the content	Yes / No	48	V48 ☐	1-2
19.6. The training covered the methodology used in classrooms	Yes / No	49	V49 ☐	1-2

ANNEXURE 5

SECTION C: EDUCATORS' ATTITUDES TOWARD TECHNOLOGY

Please read the statement and then cross the number/box, which best describes how you feel.

1 = Disagree
2= Strongly disagree
3= Agree
4= Strongly disagree

	1	2	3	4		For office use only
20. Technology is very important in life	☐	☐	☐	☐	50	V50 ☐ 1-4
21. A female can have a technology profession just as well as a male	☐	☐	☐	☐	51	V51 ☐ 1-4
22. Males are able to repair things better than females	☐	☐	☐	☐	52	V52 ☐ 1-4
23. To understand something of technology you have to take a difficult training course	☐	☐	☐	☐	53	V53 ☐ 1-4
24. I need support in order to teach technology effectively	☐	☐	☐	☐	54	V54 ☐ 1-4
25. Technology related activities are difficult to understand	☐	☐	☐	☐	55	V55 ☐ 1-4
26.Technology is always bad for the environment	☐	☐	☐	☐	56	V56 ☐ 1-4
27. Males know more about technology than females	☐	☐	☐	☐	57	V57 ☐ 1-4
28. I like to read technology magazines	☐	☐	☐	☐	58	V58 ☐ 1-4
29. Technology is as difficult for females as it is for males	☐	☐	☐	☐	59	V59 ☐ 1-4

ANNEXURE 5

For office use only

30. I am highly motivated to teach Technology	☐	☐	☐	☐	60	V60 ☐	1-4
31. My training in College/University prepared me to teach technology	☐	☐	☐	☐	61	V61 ☐	1-4
32. Most learners I teach perform well in Technology	☐	☐	☐	☐	62	V62 ☐	1-4
33. Unavailability of tools and equipment demotivate learners	☐	☐	☐	☐	63	V63 ☐	1-4
34. Administration does not provide necessary resources for teachers	☐	☐	☐	☐	64	V64 ☐	1-4
35. Time allocated to teach Technology is enough to prepare learners for exam	☐	☐	☐	☐	65	V65 ☐	1-4
36. Learners' abilities are not limited by the facilities available	☐	☐	☐	☐	66	V66 ☐	1-4
37. Reading and writing capabilities of learners affect performance in Technology	☐	☐	☐	☐	67	V67 ☐	1-4
38. Technology should be excluded from the curriculum	☐	☐	☐	☐	68	V68 ☐	1-4

ANNEXURE 5

SECTION D: TECHNOLOGY RESOURCES

For office use only

The aim of this section is to determine the specific tools, equipment and other resources that exist in the school.

In this section you simply put a cross on the block that applies to you. If you agree with a statement put a cross on Yes, and if you disagree put a cross on No.

39. Do you have the following resources in your technology room?

39.1 Protective workshop	Yes	No	V69 ☐ 1-2
39.2 Scissors	Yes	No	V70 ☐ 1-2
39.3. Paper punch	Yes	No	V71 ☐ 1-2
39.4 Ruler	Yes	No	V72 ☐ 1-2
39.5 Mathematics set	Yes	No	V73 ☐ 1-2
39.6 Junior Hacksaw	Yes	No	V74 ☐ 1-2
39.7 Combination pliers	Yes	No	V75 ☐ 1-2
39.8 Small bench vice	Yes	No	V76 ☐ 1-2
39.9 Soldering iron	Yes	No	V77 ☐ 1-2
39.10 Multi meter	Yes	No	V78 ☐ 1-2

ANNEXURE 5

39.11 Scale	Yes	No	For office use ☐
39.12. Tape measure	Yes	No	☐ V79 1-2
39.13. Stove (gas/paraffin/electricity)	Yes	No	☐ V80 1-2
39.14. Sewing machine	Yes	No	☐ V81 1-2
39.15. First Aid Kit	Yes	No	☐ V82 1-2
39.16. Glue Gun	Yes	No	☐ V83 1-2
39.17. Drilling machine	Yes	No	☐ V84 1-2
			V85 1-2

Thank You

ANNEXURE 6

QUESTIONNAIRE: LEARNERS' CONCEPTS AND ATTITUDES TOWARDS TECHNOLOGY

This survey is designed to discover what learners think about technology. All you have to do is read the statement and then circle the number, which best describes how you feel. Either you

Strongly agree
Agree
Disagree, or
Strongly disagree

There is no right or wrong answer; it is just how you feel. Your first reaction is probably the best one, so don't think about the statement too much. Please answer all questions.

SECTION A

You don't have to put your name on the survey, just your age, school location, region, grade and boy or girl.

1. Age (years) _____

2. Location of School

Urban
Rural

3. Region _____

4. Grade

7
8
9

5. Gender

Boy
Girl

ANNEXURE 6

SECTION B

Read each statement and circle the number which indicates how you feel about the statement. Circle only one number in each statement.

Key

1. = Strongly agree
2. = Agree
3. = Disagree
4. = Strongly disagree

6. Technology is very important in life.	1	2	3	4
7. Technology makes everything go better than before	1	2	3	4
8. Technology is only concerned with computers.	1	2	3	4
9. Working in technology is very creative	1	2	3	4
10. Girls can do technology	1	2	3	4
11. I positively want to have a job in technology	1	2	3	4
12. Developed countries can do much for developing countries by technology	1	2	3	4
13. Technology is good for the economy	1	2	3	4
14. All jobs have something to do with technology	1	2	3	4
15. In everyday life you have much to do with technology	1	2	3	4
16. In technology you have many opportunities to use your imagination	1	2	3	4
17. Technology is too difficult for me	1	2	3	4
18. A girl can have a technological profession just as well as a boy	1	2	3	4
19. In technology you have to design things by yourself	1	2	3	4
20. For learners of my age technology is interesting	1	2	3	4
21. I know pretty well how an electric kettle works	1	2	3	4

ANNEXURE 6

22. In the newspapers you often read about technology	1 2 3 4
23. Without technology there would be more problems in the world	1 2 3 4
24. Boys are able to repair things better than girls	1 2 3 4
25. You have to be creative in technology	1 2 3 4
26. A hundred years ago there was no technology	1 2 3 4
27. I would like to learn more about technology at school	1 2 3 4
28. Developing countries should develop their own technology	1 2 3 4
29. Technology gives people more leisure	1 2 3 4
30. It is difficult for me to say now whether I want to choose a technological profession or not	1 2 3 4
31. There should be more TV programmes about technology	1 2 3 4
32. Thoughts of technology are often in my mind	1 2 3 4
33. If there was a hobby club about technology at school, I would certainly join it	1 2 3 4
34. I know what the word technology means	1 2 3 4
35. Boys know more about technology than girls	1 2 3 4
36. I would like to have a career in technology later on.	1 2 3 4
37. When I choose a profession I consider whether it is technological or not	1 2 3 4
38. Technology is as difficult for girls as it is for boys	1 2 3 4
39. You must be very clever to be able to study technology	1 2 3 4

ANNEXURE 6

40. Modern technology should be adapted before being applied in developing countries	1	2	3	4
41. At school you should learn more about repairing things around the home	1	2	3	4
42. You can learn a lot of technology by yourself	1	2	3	4
43. In technology there is much opportunity to invent things by yourself	1	2	3	4

Thank you for your cooperation

ANNEXTURE 7

SEMI-STRUCTURED INTERVIEW SCHEDULE: LEARNING AREA HEADS

1. What do you think are the critical issues to be considered when implementing Technology in the North West Province schools?
2. What approach could we adopt to implement Technology in the North West Provincial schools?
3. What are the hindrances towards Technology education implementation in schools in the North West Province?
4. What do you think should be done in order to solve these problems in the implementation on Technology Education in schools?
5. Is there any professional development programme for Technology Education teachers in the North West Province?
6. What is the attitude of educators towards Technology implementation in the North West Province?
7. What is the general attitude of learners towards the learning area Technology?
8. Do you have sufficient tools, equipment and resources to deliver the curriculum to defined standards?
9. Do you have any other comment to make regarding the implementation of Technology in the North West Province?

Thank you

ANNEXURE 8

SEMI-STRUCTURED INTERVIEW SCHEDULE: TECHNOLOGY SPECIALISTS

1. What do you think are the critical issues to be considered when implementing Technology in schools?
2. What approach could we adopt to implement Technology in the North West Provincial schools?
3. What are the hindrances towards Technology education implementation in schools?
4. What do you think should be done in order to solve these problems in the implementation on Technology Education in schools?
5. Is there any professional development programme for Technology Education teachers?
6. What is the attitude of educators towards Technology implementation?
7. What is the general attitude of learners towards the learning area Technology?
8. Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards?
9. Do you have any other comment to make regarding the implementation of Technology?

Thank you

ANNEXURE 9

SEMI-STRUCTURED INTERVIEW SCHEDULE: TECHNOLOGY EXPERTS

1. What do you think are the critical issues to be considered when implementing Technology in schools?
2. What approach could we adopt to implement Technology in the North West Provincial schools?
3. What are the hindrances towards Technology education implementation in schools?
4. What do you think should be done in order to solve these problems in the implementation on Technology Education in schools?
5. Is there any professional development programme for Technology Education teachers?
6. What is the attitude of educators towards Technology implementation?
7. What is the general attitude of learners towards the learning area Technology?
8. Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards?
9. Do you have any other comment to make regarding the implementation of Technology?

Thank you

ANNEXURE 10

INTERVIEW TRANSCRIPT: TECHNOLOGY EXPERTS: INTERVIEWEE No.1

Interview between interviewer (I) and respondent one (R1): Dr G 1

I: Good afternoon Doctor 2

R1: Good afternoon Mr Tholo and how can I help you this day? 3

I: Yes doctor it is regarding the interview which I told you about last week 4

R1: Oh yes let me quickly get those questions. I am ready now 5

I: OK. Here is question number 1: What do you think are the critical issues to be considered when implementing Technology in schools? 6

R1: Um, Teachers' level of readiness. Teachers are the foot soldiers of the Department of Education and if not properly trained confusion and frustration with implementation are inevitable. Support needs to be mobilized by engaging key stakeholders. Awareness campaigns about the benefits of the subject need to be embarked upon, especially targeting parents and learners.

I: Thank you. Can we go to question number two? 7

R1: certainly! 8

I: What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 9

R1: Better to develop a concept and approach of "Technology Project/Model Schools" and marshal efforts towards them to heighten interest. Then implement the Project in all schools. 10

I: All right. What are the hindrances towards Technology education implementation in schools? 11

R1: Concept/Philosophy of technology; inadequately trained teacher force; undedicated support to train educational officials manning the National and Provincial Technology Projects; lack of awareness campaigns. National and Provincial Expo's tend to put science projects ahead of technology projects. This approach hides away the face of technology and it is portrayed as such purely as science. 12

I: OK. Now what do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 13

R1: The subject needs to be invested in like it is done with science. Technology teachers cannot always be expected to improvise resources and equipment. Teachers with training in Technology Education should be given the priority to feel senior posts. Technology needs to be made relevant to the African community by incorporating IKS and indigenous technologies. In most cases technology is portrayed as a Western man's thing. Learners need to meet the contributions of their community members in the technology literature. Choice of such needs to take care of this factor. The curriculum is inspired by principles that are supposed to accommodate the rich African knowledge and know-how (see LO 3 for GET Band, for instance). Teachers' workshops need to empower teachers in this aspect. 14

I: Is there any professional development programme for Technology Education teachers?

R1: I only know of OBE workshops which seem inadequate (see Gumbo, 2003 – Indigenous Technologies: Implications for a Technology Education curriculum – PhD thesis). The 2006 SAARMSTE conference cast light about the Netherlands in-service technology teachers being trained for more than a year through universities or colleges. This suggests that since Technology Education is relatively a new learning area, teachers' training in the field may not have to be squashed in a short period like the rest of other learning areas. 15

I: What is the attitude of educators towards Technology implementation? 16

R1: Mixed feelings. My PhD study found teachers to be positive about the opportunity the offering provides in the teaching career and for entrepreneurship. On the other hand they felt despondent about lack of resources and poor training. 17

I: What is the general attitude of learners towards the learning area Technology?
R1: Once again my PhD study found learners to be thrilled about career opportunities that the subject will expose them to, and were motivated by the fact that technology rules the world. However, many of them felt that technology is distanced from their worldview and that the educational approach does not affirm the African technological contributions. 18

I: Dr G Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 19
R1: I am involved at tertiary level. However, I have generally observed that Technology Education is still afforded an inferior position compared to science and math. It thus suffers lack of support with regard to provision of tools, equipment and resources. 20

I: Do you have any other comment to make regarding the implementation of Technology? 21

R1: Nothing for now thanks.

I: Thank you so much doctor for your time.

ANNEXURE 10

INTERVIEW TRANSCRIPT: INTERVIEWEE No.2

Interview between interviewer (I) and respondent two (R2): Mr M

I: Morning to you Mr M 22

R2: Good morning Mr T 23

I: Are you ready for the questions which I e-mailed to you last week? 24

R2: Yes Mr T I think we can start 25

I: Thanks. The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 26

R2: Resources:

Teachers are critically important. They need to be motivated and supported in delivering the subject. (Not forced to do it because there is nobody else)

Tools and materials are needed. For this to occur the principal needs to support the implementation.

The teacher needs a good set of projects and LSM's to help him or her roll out the delivery of projects, so that learning happens. 27

I: Thank you. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 28

R2: We need to implement the NCS as closely as possible. It is as good a curriculum as any in the world.

Roll our needs to focus on the 5 processes and skills

We need to make sure that the subject does not become theoretical. (this is unfortunately often the case due to lack of resources).

We need to lift up the making skills as the most important aspect of technology. We should be emphasizing these skills and the practical nature of the subject much more. 29

I: OK. What are the hindrances towards Technology education implementation in schools? 30

R2: Resources are not there. (skilled teachers, tools, materials) 31

There is no "buy in" from principals and school managers. It is often seen as an unimportant subject. It is seen as costly to implement. 32

I: That is fine. What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 33

R2: We need to implement a common technology Programme in a large sample of schools across the country (say 50 to 100). For this to succeed we need to train teachers to do specific projects in schools and then we need to monitor the implementation of these projects.

We obviously will need to resource these projects fully in these schools in a cost effective way, with a view to extending to all schools across eth country. We can then adapt and extend the projects to more schools. We can call these projects "safety net" projects to be run as "minimum standards". Once teachers are confident with these projects, they can begin to implement their own projects. 34

I: Is there any professional development programme for Technology Education teachers? 35

R2: I know of several.

University of the North and PROTEC offer and ACE over 2 years.

UKZN and Technology for all do something similar.

ORT-STERP still offer courses in some HEI's (e.g. UPE)

Johannesburg University (ex RAU) offers Masters Degrees and PhD's. 36

I: What is the attitude of educators towards Technology implementation? 37

R2: Very mixed. Some (those who chose to do it) love it and are very enthusiastic.
Those who are forced to do it and are having to change there mindsets from subjects like the Technica's or home economics are sometimes reluctant to change.
Those redeployed from oversupplied subjects like Afrikaans are often demoralized and very reluctant to change there approaches to education. 38

I: What is the general attitude of learners towards the learning area Technology? 39
R2: Most learners love it. Some however (those who generally succeed at the more academic level) often resist the practical side. There are learning styles issues which we need to acknowledge, and technology will not be received well by all learner all of the time. 40

I: Mr M Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 41
R2: No. Technology has a low status and little support in most schools. However qualified educators normally improvise. 42

I: Do you have any other comment to make regarding the implementation of Technology? 43
R2: The value of implementing technology is massive compared to the difficulties. While we need to acknowledge the difficulties, we are failing to communicate the benefits.
Learners will benefit enormously from technology if implemented property. It is not such an easy subject for teachers thought. It needs and enthusiast..
There is a danger that if we continue to implement technology badly, then we are doing more harm than good. It would be better to make the subject non-compulsory that to continue to "pretend" that implementation is proceeding well. 44

I: Thank you very much Mr M 45

INTERVIEW TRANSCRIPT: INTERVIEWEE No.3

Interview between interviewer (I) and respondent three (R3): Prof D

I: Good day Professor 46
R3: Morning T 47
I: I was very impressed with your presentation at the SAARMSTE conference.
Can I have some of your time to go through the interview? 48
R3: Sure T 49

I: Thanks. The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 50
R3: (1) developing a sound conceptual basis for technology education thereby using philosophy of technology) and (2) collecting evidence that technology education makes a change and for this valid and reliable assessment instruments need to be developed. 51

I: Thank you. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 52
R3: Given the financial constraints I would recommend to focus on the teaching and learning of basic technological concepts that can be taught in any environment. I herewith attach a document that explains that approach. 53

I: OK. Question number three: What are the hindrances towards Technology education implementation in schools? 54
R3: (1) the poor image of the subject with school boards and parents (craft-like, tinkering, no high status like science), (2) impatience of politicians who want immediate results after implementation (which is unrealistic, but yet they want it), and (3) lack of evidence so far that technology makes a difference 55

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 56

R3: Most important is to get all parties involved: teachers well trained, politicians to take supportive measures, school board providing equipment and rooms, enthusiastic pupils, industrial support (not only in terms of money but also in terms of real interest), and educational research to back up development. 57

I: Is there any professional development programme for Technology Education teachers?

R3: Yes, both in and outside South-Africa: University of Johannesburg (the former RAU people) and University of Pretoria are closest to the Northwest Province as far as I know. 58

I: What is the attitude of educators towards Technology implementation? 59

R3: That varies greatly between subjects. Science teachers will be inclined to say that it is not necessary because they already do technology (which is not the case; they merely do some applied science), teachers of most other areas will not be interested (they object neither support), and craft teachers generally will see a change of expanding their subject (in particular the design approach is common for them). 60

I: What is the general attitude of learners towards the learning area Technology? 61

R3: In those places where good technology education is in place, pupils are very positive about it. Also their initial attitude is positive, as many research studies have shown. 62

I: Prof Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 63

R3: Technology education can be taught in a large variety of environments. In that respect no school can claim that they can not teach technology. Teachers have to learn to see the richness of their environment to detect the many opportunities. 64

I: Do you have any other comment to make regarding the implementation of Technology? 65

R3: The coming years will be crucial for technology education in many countries. Therefore it is important that teachers are able to give a good answer to the question: what is this subject you teach? If their answer does not go beyond the level of a list of projects in which pupils have made products, they will be in trouble. 66

I: Thank you very much Prof and God bless you. 67

INTERVIEW TRANSCRIPT: INTERVIEWEE No.4

Interview between interviewer (I) and respondent four (R4): Prof B

I: Hallo Prof 68

R4: Morning to you sir 69

I: Can we start with our session of questions as requested in the e-mail? 70

R4: No problem we can start 71

I: Thanks. The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 72

R4: Critical issues are :

1) Teacher understanding of the purpose of Technology education
2) Subject knowledge of the teachers
3) Materials and equipment that needs to be available 73

I: Thank you. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 74

R4: I suggest that you:

a. Investigate in-service ideas such as the distance-learning techniques to In-service work as adopted by UNISA

b. Produce a common set of materials and equipment so that teachers can share common ideas and approaches. These materials might be sponsored. 75

I: OK Prof. Question number three: What are the hindrances towards Technology education implementation in schools? 76

R4: I think a key problem has been the lack of background in the subject by those implementing it so that assessment approaches that are competence-based become particularly problematic 77

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 78

R4: I would link up common teacher training with a common syllabus for pupils (including written materials as a work book/work sheets) with common materials and shared assessment instruments. This integrated approach will enable an economy of scale that would save a lot of money and have a greater impact. 79

I: Is there any professional development programme for Technology Education teachers?

R4: Yes some in the UK. I suggest you look at

http://web.data.org.uk/data/index.php

and http://www.iteaconnect.org/ 80

I: What is the attitude of educators towards Technology implementation? 81

R4: Technology has earned its place as a part of the curriculum in the UK for the ages 5 to 14 years. It is seen as much more than craft but it still has a certain credibility problem when it embraces some material areas such as food and textiles as well as electronics and wood and plastics. 82

I: What is the general attitude of learners towards the learning area Technology? 83

R4: This rather depends on how well it is taught. Most parents are more prejudiced against technology as a curriculum area for all than are pupils 84

ANNEXURE 10

I: Prof Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 85

R4: Yes in the UK I think they generally do. 86

I: Do you have any other comment to make regarding the implementation of Technology? 87

R4: No. 88

I: Thank you very much Professor 89

ANNEXURE 11

INTERVIEW TRANSCRIPT: TECHNOLOGY SPECIALISTS: INTERVIEWEE No. 5

Interview between interviewer (I) and respondent one (R1): Mr MD 90

I: Good morning Mr MD 91
R1: Morning Mr T 92

I: Can we start with the first question? 93
R1: Yes sir we can start 94

I: Thanks. The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 95
R1: Thorough training of educators
Resource centre for enrichment purposes
Provision of Technology equipment and tools
Sufficient educators and subject advisors 96

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 97
R1: The Outcomes Based Education approach
Training of educators on a continuous basis 98

I: What are the hindrances towards Technology education implementation in schools? 99
R1: Lack of technological background amongst educators
Lack of educator support and development
Lack of sufficient subject advisors 100

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 101
R1: Thorough workshop and training of educators
Subject advisors must be provided with transport so as to perform their duties well

Restructuring each APO to be provide with own subject advisor 102

I: Is there any professional development programme for Technology Education teachers? 103

R1: Yes. Short workshops for educators 104

I: What is the attitude of educators towards Technology implementation? 105

R1: Some educators do not take the subject serious and some view it as being difficult. Educators do not teach all the learning outcomes and assessment standards. 106

I: What is the general attitude of learners towards the learning area Technology? 107

R1: Some learners enjoy it especially boys. Girls do not like the hands-on approach to Technology. 108

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 109

R1: No. There is a big shortage in schools. 110

I: Do you have any other comment to make regarding the implementation of Technology? 111

R1: Restructuring of the curriculum section, each APO should be provided with the subject advisors to give support and provide equipment and tools to schools. 112

I: Thank you very much Mr MD 113

ANNEXURE 11

INTERVIEW TRANSCRIPT: TECHNOLOGY SPECIALISTS: INTERVIEWEE No. 6

Interview between interviewer (I) and respondent two (R2): Mr JL

I: God morning Mr JL 114
R2: Morning Mr T 115

I: Are you ready to start? 116
R2: Yes sir we can start 117

I: Thanks. The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 118
R2: Tools and equipment must be supplied to schools
Provide bigger classrooms or workspace 119

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 120
R2: Importance of Technology to society must be emphasized
Develop problem solving skills
Emphasise the link between GET and FET 121

I: What are the hindrances towards Technology education implementation in schools? 122
R2: No proper equipment and workshops in schools
Lack of resources in poor communities
Lack of parental support 123

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 124
R2: Tools and equipment must be supplied to schools
Special Technology classrooms must be built
Training of teachers by universities 125

ANNEXURE 11

I: Is there any professional development programme for Technology Education teachers? 126

R2: Yes
Normal training by subject advisors
Courses at North West university/Wits and university of Johannesburg 127

I: What is the attitude of educators towards Technology implementation? 128
R2: Some teachers do not show interest in the learning area especially that they do not have any background knowledge. 129

I: What is the general attitude of learners towards the learning area Technology? 130
R2: Learners like it if teachers teach it properly 131

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 132
R2: No. Most schools do not have equipment and tools except for the technical schools. 133
I: Do you have any other comment to make regarding the implementation of Technology? 134
R2: More practical must be offered in the GET band in well resourced spacious rooms. 135

I: Thank you very much Mr L 136

ANNEXURE 11

INTERVIEW TRANSCRIPT: TECHNOLOGY SPECIALISTS: INTERVIEWEE No. 7

Interview between interviewer (I) and respondent three (R3): Mr MK

I: God morning Mr MK 137
R3: Morning Mr T 138

I: Can I ask you a few questions about the implementation of Technology as agreed during the Technology conference? 139
R3: Yes sir you are most welcome 140

I: Thank you. The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 141
R3: Teachers should be properly trained
Materials and equipment should be supplied 142

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 143
R3: The competency based modular approach. It must be based on the needs of the community. Learners should be competent in one area of knowledge before they proceed to the next area. 144

I: What are the hindrances towards Technology education implementation in schools? 145

R3: Lack of resources
Time allocated to teach the learning area
School infrastructure, and
Teacher- learner ratio 146

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 147
R3: More workshops until everyone is clear about implementation issues 148

ANNEXURE 11

I: Is there any professional development programme for Technology Education teachers? 149

R3: Yes The in-service training workshops but they are not enough 150

I: What is the attitude of educators towards Technology implementation? 151

R3: The attitude of the educators who have been trained is fair but for those who were not trained it is negative 152

I: What is the general attitude of learners towards the learning area Technology? 153

R3: If the teacher is well prepared and enthusiastic, the attitude of the learners is positive and vice versa 154

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 155

R3: No. Most of them are having a short supply. 156

I: Do you have any other comment to make regarding the implementation of Technology? 157

R3: The Department should appoint more subject advisors to increase the level of support in schools 158

I: Thank you very much Mr MK 159

ANNEXURE 11

INTERVIEW TRANSCRIPT: TECHNOLOGY SPECIALISTS: INTERVIEWEE No. 8

Interview between interviewer (I) and respondent four (R4): Mr TM

I: God morning Mr TM 159
R4: Morning Mr T 160

I: Can I ask you a few questions on the implementation of Technology in the province? 161
R4: Yes Mr T 162

I: Thank you. The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 163

R4: Funds must be made available
Educators must be trained
Trainers must be well qualified
Conducive working space for schools 164

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 165
R4: The competency based modular approach. It must be based on the needs of the community. Learners should be competent in one area of knowledge before they proceed to the next area. 166

I: What are the hindrances towards Technology education implementation in schools? 167
R4: Identifying technological needs around the province
Inviting skilled people to contribute towards policy formulation
Train the trainers to train educators 168

ANNEXURE 11

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 169

R4: Recruit well qualified educators to teach Technology

Avail facilities to schools

Train educators to increase capacity

Avail incentives for Technology educators 170

I: Is there any professional development programme for Technology Education teachers? 171

R4: Yes short courses that are offered by subject advisors. Educators who are not properly qualified to offer the learning area are a cause for concern 172

I: What is the attitude of educators towards Technology implementation? 173

R4: Positive but they concentrate on chapters they master most or those they have been trained on. 174

I: What is the general attitude of learners towards the learning area Technology? 175

R4: Positive if educators are knowledgeable about the learning area 176

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 177

R4: No. Not at all 178

I: Do you have any other comment to make regarding the implementation of Technology? 180

R4: No 181

I: Thank you very much Mr TM 182

ANNEXURE 12

INTERVIEW TRANSCRIPT: HEAD OF DEPARTMENT: INTERVIEWEE No.9

Interview between interviewer (I) and respondent one (R1): Ms DT

I: Good morning Ms DT 183
R1: Morning Mr T 184

I: Can we start with the first question? 185
R1: Yes sir we can start 186

I: The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 187
R1: Resource
Manpower
Plan of action in development
Implementation 188

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 189
R1: We should first investigate how other countries succeeded in implementation. Then assess their weaknesses and strengths in their implementation 190

I: What are the hindrances towards Technology education implementation in schools?
191
R1: Money
Resources
Rural areas
Electricity and water
Attitude
Popularity of the subject 192

I: What do you think should be done in order to solve these

ANNEXURE 12

INTERVIEW TRANSCRIPT: HEAD OF DEPARTMENT: INTERVIEWEE No.10

Interview between interviewer (I) and respondent two (R2): Mr. A.S

I: Good afternoon Mr A.S. 206
R2: Afternoon Mr T 207

I: Can we start with the first question of our interview? 208
R2: Yes sir we can start 209

I: The first question is: What do you think are the critical issues to be considered when implementing Technology in schools? 210
R2: Start with workshops for teachers
Avail resources for technology 211

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 212
R2: Make 'awareness' campaigns to make people realize the need for teaching technology 213

I: What are the hindrances towards Technology education implementation in schools? 214
R1: This province being one of the poor provinces in South Africa
Some areas (rural) don't have basic needs like water and electricity
Negative attitude of people towards Technology
Resources being expensive, to buy for every schools 215

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 216
R2: Organise imbizos for the community
Look for sponsors

ANNEXURE 12

Supply basic needs to schools in our province 217

I: Is there any professional development programme for Technology Education teachers?
R2: Yes, there are

At tertiary institutions e.g. UNIWEST, technikons and colleges 218

I: What is the attitude of educators towards Technology implementation? 219
R2: To some positive and others negative
Educators are afraid of change
Technology is seen as an expensive exercise 220

I: What is the general attitude of learners towards the learning area Technology? 221
R2: Good
Some realize their talent for creativity
Learners love the responsibility of solving problems 222

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 223
R2: No we don't have. That is why Technology is unpopular.
It is expensive 224

I: Do you have any other comment to make regarding the implementation of Technology? 225
R2: Yes

I think we should try for another 10 years before we could consider Technology to be a failure 226

I: Thank you very much Mr A.S 227

ANNEXURE 12

INTERVIEW TRANSCRIPT: HEAD OF DEPARTMENT: INTERVIEWEE No.11

Interview between interviewer (I) and respondent three (R3): Mr. G.T

I: Good afternoon Mr G.T. 228
R3: Hi Mr T 229

I: Can we start with the first question of our interview? 230
R3: Yes sir 231

I: What do you think are the critical issues to be considered when implementing Technology in schools? 232
R3: If professional manpower is in place to see it implemented
To prepare learners for Technology by orientation and workshops
To avail resources
To establish workshops in schools
To train teachers in Technology 233

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 234
R3: Offer bursaries to teachers to further their studies
Offer better salaries for Technology teachers
Offer prices to teachers who produce good results in Technology learning areas
Offer benefits to interested candidates 235

I: What are the hindrances towards Technology education implementation in schools? 236
R3: Cost of resources
Schools in rural areas
Lack of electricity and basic needs
Not enough manpower in top management to implement Technology
Projects not followed through

ANNEXURE 12

Being in the third world country 237

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 238

R3: Draw up a plan of action towards the development of implementation

Start with basic needs

Involve all stakeholders

Start small 239

I: Is there any professional development programme for Technology Education teachers? 240

R3: Yes there are courses being offered at tertiary level

Teachers are encouraged to register for these programmes 241

I: What is the attitude of educators towards Technology implementation? 242

R3: It is negative

Some are afraid of change

Some are discouraged before they try

Some believe it is difficult and won't work 243

I: What is the general attitude of learners towards the learning area Technology? 244

R3: It is positive

They love solving problems

They love to be engaged in being creative 245

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 246

R3: Not really

The lack thereof is causing implementation to be slow 247

I: Do you have any other comment to make regarding the implementation of Technology? 248

R3: Yes

If teachers are encouraged to keep on trying to implement it, ultimately we will succeed

If we all own Technology as belonging to everyone, we will conquer the battle 249

I: Thank you very much Mr G.T. 250

INTERVIEW TRANSCRIPT: HEAD OF DEPARTMENT: INTERVIEWEE No.12

Interview between interviewer (I) and respondent four (R4): Ms A.M

I: Good afternoon Ms A.M 251

R4: Afternoon Mr T 252

I: Can we start with the first question of our interview? 253

R4: Yes sir we may start 254

I: What do you think are the critical issues to be considered when implementing Technology in schools? 255

R4: The teachers need to be taken in for an inservice training course in Technology Education first

There needs to be basic resources in schools

Great consideration should be noted that North West is predominantly rural. This means that electricity, water and sewage systems are still lacking in some areas 256

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 257

R4: I think all stakeholders should be involved in the whole process of implementation

Parents and community needs to be hand on in Technology Education so that they too, in the process be familiar with basic technology and what is expected 258

ANNEXURE 12

I: What are the hindrances towards Technology education implementation in schools? 259

R4: Unskilled teachers

Lack of interest from learners 260

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 261

R4: Teachers needs to be encouraged to register technology education at varsity level, in order to gain insight into the learning areas

There should be enough competition or contests to outshine each other. It will bring back the need to excel in our learners 262

I: Is there any professional development programme for Technology Education teachers? 263

R4: Yes, there is. At the North West University or at Potchefstroom University 264

I: What is the attitude of educators towards Technology implementation? 265

R4: Is negative because they don't understand it 266

I: What is the general attitude of learners towards the learning area Technology? 267

R4: They like it though they say they don't see the need to learn it since they live in rural Villages 268

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 267

R4: No, we don't 268

I: Do you have any other comment to make regarding the implementation of Technology? 269

R4: Yes, why cant we seek help from other provinces like Gauteng? Maybe they might help in showing us of how they did it 270

I: Thank you very much Ms A.M 271

ANNEXURE 12

INTERVIEW TRANSCRIPT: HEAD OF DEPARTMENT: INTERVIEWEE No.13

Interview between interviewer (I) and respondent five (R5): Ms O.M

I: Good afternoon Ms O.M 272
R5: Afternoon Mr T 273

I: Can we start with the first question of our interview? 274
R5: Yes
I: What do you think are the critical issues to be considered when implementing Technology in schools? 275
R5: Resources is of the utmost importance Workshop teachers 276

I: Question number two. What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 277
R5: Identify all schools that needs Technology facilitators Workshop facilitators 278

I: What are the hindrances towards Technology education implementation in schools? 279
R5: Lack of accessibility to schools in rural areas
Lack of teachers to teach learning area Technology
Lack of funds and resources 280

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 281
R5: Enough money be budgeted to curb problems
Time frame be set for proper implementation 282

I: Is there any professional development programme for Technology Education teachers? 283
R5: Yes, there is. At the North West University or at Potchefstroom University 284

I: What is the attitude of educators towards Technology implementation? 285

R5: Positive with a bit of sceptism if Technology is there to stay 286
I: What is the general attitude of learners towards the learning area Technology? 287
R5: They love technology but get frustrated because of lack of resources 288

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 289
R5: No, we don't 290

I: Do you have any other comment to make regarding the implementation of Technology? 291
R5: No 292

I: Thank you very much Ms O.M 293

INTERVIEW TRANSCRIPT: HEAD OF DEPARTMENT: INTERVIEWEE No.14

Interview between interviewer (I) and respondent six (R6): Mr L.T

I: Good morning Mr L.T 294

R6: Morning Mr T 295

I: Can I ask you a few questions as per interview schedule that I faxed to your school? 296
R6: Yes sir 297

I: What do you think are the critical issues to be considered when implementing Technology in schools? 298
R6: There must be qualified educators in this learning area
There must be relevant equipments for this learning area 299

I: What approach could we adopt to implement Technology in the

North West Provincial schools? (Or South Africa)? 300
R6: Learner centred approach and teaching through modules 301

I: What are the hindrances towards Technology education implementation in schools? 302
R6: Lack of specialists in Technology and also lack of resources 303

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 304
R6: The schools should identify educators who are willing to develop to go and study and specialize in this learning area. They must also learn in workshops to upgrade their capabilities 305

I: Is there any professional development programme for Technology Education teachers? 306
R6: Yes, the North West University (Mafikeng Campus) offers a programme of ACE. (Advanced Certificate in Education) Technology teachers who are teaching technology are able to develop themselves 307

I: What is the attitude of educators towards Technology implementation? 308
R6: Educators like and enjoy teaching technology. The only challenges is that there are no facilities and resources we only improvise. 309

I: What is the general attitude of learners towards the learning area Technology? 310
R6: Learners enjoy this learning area, especially when doing projects. They like what they see after following all the technological processes 311

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 312
R6: No, like I have already mentioned, we improvise 313

I: Do you have any other comment to make regarding the implementation of Technology? 314

R6: I urge the department of education to provide schools with relevant resources and to build workshops where learners can learn conducively 315

I: Thank you very much Mr L.T 316

INTERVIEW TRANSCRIPT: HEAD OF DEPARTMENT: INTERVIEWEE No.15

Interview between interviewer (I) and respondent seven (R7): Mr L.T

I: Good morning Mr L.T 317
R7: Morning Mr T 318

I: Can I take a few minutes of your time by asking you some questions related to Technology in schools? 319
R7: Oh yes that's fine 320

I: What do you think are the critical issues to be considered when implementing Technology in schools? 321
R7: To develop citizens with technological literacy
To reduce technological unemployment
To develop problem solving skills among learners
To develop citizens with hands on skills
To promote team work among learners
To develop good communication skills
To teach learners to take responsibility
To learn learners to use resources economically and to know their properties
To teach learners to communicate effectively with each other 322

I: What approach could we adopt to implement Technology in the North West Provincial schools? (Or South Africa)? 333

R7: The learner centered approach is the most suitable one because it allows learners to explore. It will develop research skills among learners 334

I: What are the hindrances towards Technology education implementation in schools? 335
R7: Lack of qualified educators
Lack of infrastructures and resources
Lack of subject advisors
Insufficient time
Overcrowded classrooms 336

I: What do you think should be done in order to solve these problems in the implementation on Technology Education in schools? 337
R7:
The department should develop educators
Supply schools with resources
Send Section 21 in advance to purchase the necessary materials
Develop resources centres in schools
Build more school or extra classrooms
Hold ongoing workshops 338

I: Is there any professional development programme for Technology Education teachers? 339
R7: The University of North West is offering Advance Certificate in Education with Technology as a major course BED Honours Technology Education is also available for advance technologists 340

I: What is the attitude of educators towards Technology implementation? 341
R7: Lack of support from subject advisors
Lack of involvement in the development of curriculum
Lack of facilities
Insufficient time for practical work 342

I: What is the general attitude of learners towards the learning area Technology? 343

R7: Educators with lack of content knowledge
Insufficient time
Their provision of resources
Parents resources (tools) get lost at school, and the school is not responsible for the lost
Technological resources are expensive, they are unable to provide 344

I: Do you think schools have sufficient tools, equipment and resources to deliver the curriculum to defined standards? 345
R7: The school had a toolbox which was offered during the implementation of Technology. Most of the tools are broken (hammer, pliers, screwdriver) due to poor quality. Presently we have only an empty box that need to be filled if possible 346

I: Do you have any other comment to make regarding the implementation of Technology? 347
R7: Technology is a very interesting and challenging LA as is develops learners with problem solving skills
It provides learners with basic foundation for the FET brand
It makes them familiar with the world in which they live 348

I: Thank you very much Mr L.T 349