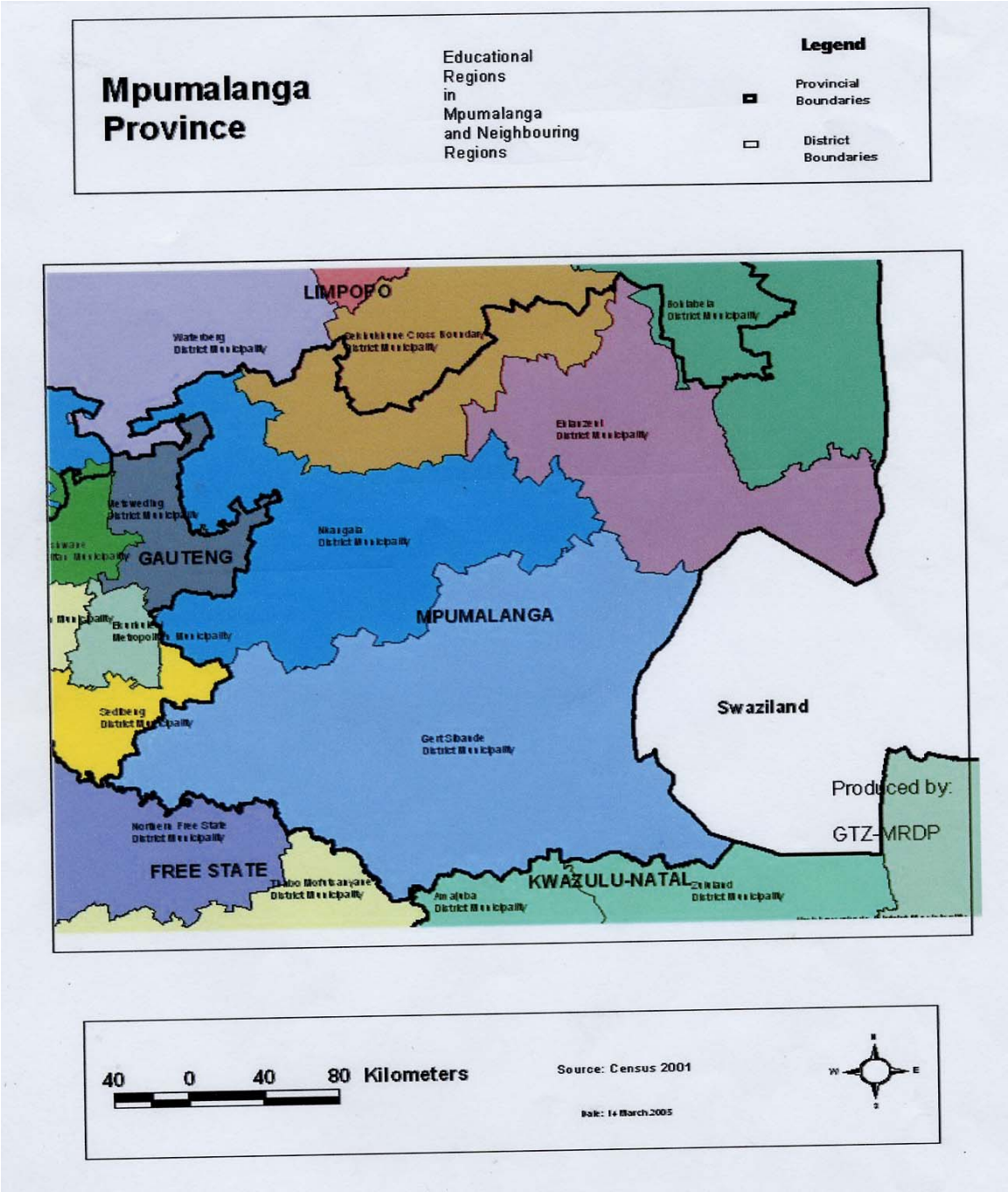
Appendix 1


Mpumalanga Province
Educational Regions in Mpumalanga and Neighbouring Regions
Legend
Provincial Boundaries
District Boundaries
LIMPOPO
GAUTENG
MPUMALANGA
Swaziland
FREE STATE
KWAZULU-NATAL
Produced by:
GTZ-MRDP
40 0 40 80 Kilometers
Source: Census 2001
Date: 14 March 2005

Appendix 2

REPUBLIC OF SOUTH AFRICA
MPUMALANGA DEPARTMENT OF EDUCATION

MPUMALANGA SECONDARY SCIENCE INITIATIVE (MSSI)

GUIDELINES FOR THE FORMATION OF CLUSTER

REPORT ON THE IN-SERVICE TEACHER EDUCATION AND TRAINING IN SCIENCE AND MATHEMATICS

2002

Table of contents

1 Introduction

Schools are sites of learning and teaching. Society establishes educational institutions such as schools in order to prepare its members to be functional, critical and patriotic citizens.

Humanity is experiencing a rapidly changing, technology-based economy and information-oriented twenty first century. Also, in the past fifty years society has formulated a holistic and radically different conception of learning and teaching than has previously been the case. This new experience by humanity and a radically different view of what it means to learn and teach have created new challenges and have put new demands on schools and its stakeholders. Society expects schools to prepare their youth for the new world order by helping them acquire relevant, high quality, useful knowledge, skills and values.

Educators are the main link between what society wishes to achieve through the educational experience of their youth and the quality of such an educational experience, and teachers are therefore an important resource to be nurtured. The purpose of in-service training is to improve and refine educators' knowledge, skills and values so as to become effective in their role as educators. To this extent in-service training is not an add-on but an integral part of the school life and the educational experience of the learners. Findings of research studies are unanimous on the effectiveness of in-service training and they indicate that support for in-service training at all levels of the educational enterprise is a must.

In 1994 South Africa became a constitutional state and adopted democracy, non-racialism and non-sexism as the founding ideals of its new democracy. The dawn of a new political era has opened up many possibilities and challenges for the people of South Africa. This has meant amongst other things, that:

- ✓ Opportunities that were in the past reserved for a few are expanded to all citizens.

- ✓ The educational experience should equip all citizens with knowledge, skills and values that will enable South Africa to be competitive in a rapidly globalising world.
- ✓ A new value system should underpin the practice of education and the fabric of society as a whole.
- ✓ The culture of learning and teaching should be revived and nurtured.

The Mpumalanga Secondary Science Initiative, here referred to as MSSI, is a partnership between the Mpumalanga Department of Education (MDoE), the Japanese Government through the Japanese International Cooperation Agency (JICA) and the University of Pretoria (UP).

In developing this document we have used the rich experiences that we have acquired through our exposure to Japanese Educational System, visit to a private corporation and a number of educational lectures.

2 Objectives

2.1 Project objectives

- ➢ The goal of the Mpumalanga Secondary Science Initiative is to ensure that secondary school students acquire enhanced skills in mathematics and science.

- ➢ The basic purpose of MSSI is to improve the quality of teaching in mathematics and science in the province through enhancement of the capacity and experience of the teachers. The project will also aim at promoting the development of a Province-wide system of continuous in-service training for mathematics and science teachers so that this capacity enhancement effort may evolve into sustained practice.

2.2 Our objectives as Head of Departments (HODs) or Cluster Leaders (CLs) are:

- Enable HODs/CLs to gain capacity and experience in mathematics and science through exposure to the Japanese experience with the view to improving the teaching and learning of these subjects.

- To formulate guidelines and plan for implementation of cluster activities in the province.

- To formulate relevant programs for teacher centers to address the needs of schools

3 Characteristics of MSSI project

- Promote partnership among all participants: JICA, MDoE and the Universities of Pretoria, Hiroshima and Naruto University of Education.
- Promotes teaching methodologies that result in effective teaching in mathematics and science.
- Develops group consciousness by encouraging the sharing of expertise and resources and thereby enhancing classroom teaching.
- Enhances networking of professionals through discussion and collaboration
- Provides incentives through accreditation schemes.

4 Status of implementation

The first phase of the project attempted to include all schools (grades 8 –9) over three years of implementation. In the second phase, the implementation will involve all schools (grade7-12) that are committed and willing to abide by the policies of the cluster to which they belong. The implementation is expected to commence from the academic year 2003 with more emphasis on improving classroom instruction or teaching in mathematics and natural science.

5 Proposed shift in implementation MSSI phase II

- ✓ Schools shall be encouraged to form a feasible cluster and to register with the Department of Education
- ✓ Clusters shall be encouraged to share resources and expertise.
- ✓ Workshops shall be conducted frequently at regional and circuit level to support clusters and school based INSET programs
  - CIs and HODs/CLs will actively participate in cluster programs to ensure that INSET activities filter into the classroom (see section 8.3 and 8.4).
  - Circuit Managers will play a crucial role in supporting cluster activities.
- ✓ In respect of the cascade model of training; the proposed shift is as follows:

Japan	→	HOD's/CL's study mission (with few CIs) (6 weeks in Oct - December)
		↓
Provincial level	→	CI/CL workshops. (1 week 3 times a year)
		↓
Regional level	→	Cluster support meetings (2.5 days x 3 times)
		↓
CI's role	→	Teacher center program drawn by CIs (1 day x 5 times)
		↓
Circuit level	→	Cluster meetings (1 day x many times depending on the need)
		↓
School level	→	School-based INSET (Once a month or more)

6 Training and development of HODs/CLs/CIs

The training of curriculum implementers has traditionally been twofold: mentoring and overseas experience. Currently the project is entering a new phase in its implementation. This has resulted in a shift of focus with the emphasis on cluster leaders. The current training has seven HODs and two CIs. Training in Japan basically involves exposure to the Japanese education system. Trainees were given the opportunity to visit and participate in a number of activities including; school-based INSET, visit to a teacher center, the Ministry of Education Culture Sports and Technology, the National Museum of Emerging Science and Innovation, a private corporation and a host of very informative lectures. The Japanese training was also enriched by cultural activities.

7 Conditions for successful school-based INSET

For school-based INSET to be successful and relevant to educators and learners we believe that the following conditions should be in place:

- HODs/CLs must be enthusiastic about the project
- There must be regular MSSI meetings, workshops and other activities
- Educators must be highly motivated and open minded to learn new approaches to teaching and learning.
- Principals must be supportive of school-based INSET activities.
- Schools must periodically (yearly) conduct a needs analysis
- Schools must ensure that they are always represented in cluster meetings and/or workshops (HODs/Subject Heads/Educators).
- Schools must have an in-service training policy and abide by it.
- Cooperative working must be fully encouraged to promote coordination in the schools.
- Educators must be prepared to sacrifice their time for all cluster activities (e.g. weekends and holidays)
- Educators must be willing to share expertise and take part in Peer Teacher Learning.

8 Cluster Formation

8.1 Definition

A group of schools in a given geographical area that come together with the aim of improving the quality of students' learning and achievements by working on a common program in mathematics and natural science.

8.2 Objectives of clustering of schools

- ✓ To develop a co-operative and collaborative approach to professional development of educators.
- ✓ To develop effective approaches in the teaching of mathematics and natural sciences
- ✓ To foster closer ties between teachers within a cluster and to encourage the sharing of expertise and resources.
- ✓ To jointly develop mathematics and natural science outcomes- based units which will facilitate a smooth, consistent and developmental transition from grade 7-12
- ✓ To facilitate dialogue and reflection amongst educators.
- ✓ To foster innovation and resourcefulness in educators pursuit of solutions to local problems.
- ✓ To enhance the status of the teaching profession in the community.
- ✓ To encourage schools to participate in cluster activities with the aim of improving educator's classroom teaching.
- ✓ To promote Peer Teacher Learning.

8.3 Roles of CIs

Under cluster formation we envisage that CIs will carry out the following functions:

- ➢ Logistic support:
  - Venues
  - Photocopying, printing
  - Resources or material
  - Drawing up annual Teacher Center programs

- Communication:
  - Circulars
  - Invitations
- Motivation:
  - Mentoring
  - Attending cluster meetings (invitation)
  - Coordination of clusters:
  - Organize regional meetings for sharing of expertise, knowledge and so on.
  - Compilation of materials developed
- Needs analysis
  - Conduct survey to collect information
  - Compile and keep a register of needs in the clusters and region.
  - Identify resource person(s) to address needs
  - Use above information to direct Teacher Center programs
  - (See annexure B)
- Monitoring:
  - One CI per region to collect monitoring forms from all the clusters to be forwarded to the steering committee.
- Conduct workshops on:
  - Facilitation skills, motivation, content and methodology of teaching for cluster leaders

8.4 Roles of Cluster Leaders

- Coordinate activities of a cluster
- Attend to problems encountered in a cluster
- Motivate educators
- Plan for resources needed

- Coordinate drawing up of cluster program and policy
- Submit cluster report to regional office
- Ensure communication (amongst all relevant stakeholders).
- Networking with other CLs in cluster programs (provincially).

8.5 Roles of Principals

Principals have a unique role to play. We believe that they are well placed to provide the following functions;

- To register their schools to participate in a cluster
- Encourage educators to have a school-based INSET programs
- Assist educators in attending cluster activities (financially)
- Provide resources for cluster activities
- Help make time for HODs/CLs to attend cluster activities
- Support the HODs/CLs in preparation for cluster activities (hosting)
- Invite CI to attend cluster activities
- Attend cluster activities where possible so that they can be well informed about such activities
- To ensure that their schools' needs analysis is done diligently (yearly)
- Encourage Peer Teacher Learning and team teaching.

8.6 Roles Circuit Managers

Circuit Managers also have special roles to perform to guarantee an effective implementation and running of clusters in the project. The following are some of the activities we feel they could perform.

- Encourage all schools to take part in the MSSI cluster activities
- Attend cluster activities where possible
- Maintain an open communication towards all the stakeholders in the Project
- Help provide resources for the cluster activities where possible
- Must reflect cluster activities in the circuit year program

- Support the cluster leader at all times
- Follow up cluster implementation.
- Must encourage Peer Teacher Learning and team teaching in Schools
- Assist in negotiating funding for cluster activities where necessary.

8.7 Roles of Teacher Center Managers

It is believed that teacher Center Managers could perform the following functions to greatly assist the smooth running of most school activities including that of clusters. Teacher center managers should:

- Ensure that clusters can access materials and other resources for their cluster activities.
- Be at the service of all schools in their area regardless of distance
- Reflect MSSI activities in the yearly program of the center
- Should participate in conducting the needs analysis of schools and ensure Teachers center programs reflect these identified needs
- Attend cluster activities where possible

8.8 Management Structure

The Cluster leader will have a committee composed of coordinators for the different learning areas.

8.9 Conditions for joining a cluster

- Commitment from schools to implement in their classes the instructional innovation and materials acquired from cluster activities
- Feedback on implementation
- Schools to submit regular reports as stipulated in the cluster policy
- Attend all MSSI activities consistently
- Schools must agree to host cluster activities
- Schools must be prepared to share resources and expertise

8.10 Sustainability of a cluster

- ✓ In order for a cluster to be sustainable it must have a policy.
- ✓ The policy must contain the following key aspects:
  - o Mission statement
  - o Vision
  - o Management structure
  - o Ground rules for any cluster activity
  - o Renewal clause
    - Effectiveness of the policy
    - Appropriateness of the policy
    - Effective date
    - Number of activities
    - Quorum for a cluster activity to take place
- ✓ Respect and encourage the professionalism and range of experience of teachers.
- ✓ Participant directed and collaborative.
  - self directed learning ensures that learning is most relevant to participants' specific needs, and encourages ownership and engagement with the process
- ✓ More visible support from Department of Education in terms of funding, incentives and workshops.

8.11 Challenges facing Cluster Leader

- Motivation of educators to attend.
- Workload on HODs/CLs
- Subject specific qualification
- Paradigm shift (e.g. methods used in MSSI cluster activities PTL)
- Finance to run workshops
- Transport.
- Teacher centers (not functioning, distant or not resourced)
- Geographical location of schools

- Time (as a result of impending work load)
- Lack of support from stake holders
- Bringing on board other stakeholders.
- Report writing and submission
- Reluctance and absenteeism.
- Ownership.
- Communication.
- Getting educators to work or attend cluster programs on weekends and holidays

8.12 Incentives

The following are possible incentives that could be looked at in view of the onerous nature of the work of the mathematics and science educator.

- Certification upon:
  - Attendance of cluster activities regional and circuit including the conducting of these activities.
- Academic empowerment of participants (scholarships to tertiary institutions)
- Paid up bonus for working over weekends and holidays
- Linking cluster activities to promotions
- Honorarium for HOD's/CL's per activity (fifty rands to be paid to HOD/CL)
- Opportunity to participate in the training in Japan
- Cluster educator and school of the year awards.

- Opportunity to attend conferences, symposia both national and international.

- Prizes for published articles and developing teaching materials

9 Criteria for selection of cluster leaders

- Dedication
- Vision
- Desire for sharing knowledge, skills and abilities and so on
- Willing to face challenges
- Innovative person – one who moves out of his/her comfort zone
- Desire to learn from other people
- Willingness to show respect to the members of their cluster
- A good listener – to the challenges and or ideas from their cluster members
- Cooperative skills
- Ability to show direction where necessary (ability to lead)
- Understanding the aims and objectives of MSSI project
- A sound understanding of the role a cluster leader has to play – in the cluster and with all the other stakeholders
- Organization skills – the cluster leader should know what to do, when to it and how it has to be done. (i.e. a good planner)
- Understand and be prepared to share responsibilities by delegating to other educators in their cluster some of the responsibilities shouldered by the cluster leader.
- Understand the link between cluster activities and school-based INSET.
- Empathy
- Cluster to choose the leader

10 Monitoring and assessment of MSSI program

10.1 Monitoring

10.1.1 Definition

Monitoring is a process of checking whether or not the in-service activities that have been identified by the individual schools and the cluster programs of the MSSI do take place as well as verifying the quality of such activities.

10.1.2 Mechanisms of monitoring or instruments.

Four monitoring instruments will be employed, namely, submission of reports, the actual INSET materials, evaluation forms by participants and visits by Curriculum Implementers.

10.1.3 Reports

There shall be three levels of reporting:

- ✓ The School based INSET Report compiled by the Head of Department – Natural Sciences
- ✓ The Cluster Report compiled by the Cluster Leader
- ✓ The Regional report compiled by the Curriculum Implementer responsible for coordinating cluster activities in the region.

The Head of Department – Mathematics and Natural Sciences shall submit three copies of summary report per activity conducted at the school. The principal shall keep one copy and the other two copies shall be submitted to the Cluster Leader and the Circuit Manager.

The school based inset report form shall cover the following aspects:

- ✓ Date on which the activity or INSET was conducted.
- ✓ The name of the facilitator of the activity.
- ✓ The venue where the activity was conducted.
- ✓ The content or topic that was treated.
- ✓ The Principal and Head of Department's signatures.

The Cluster Leader shall also in turn submit monthly reports summarizing all the cluster INSET activities to the Curriculum Implementer responsible for coordinating the monitoring of INSET in the region. Cluster reports must reach the coordinating Curriculum Implementer not later than the 5th day of the following month.

The Curriculum Implementer shall also summarize all the activities of the clusters within the region and submit a summary report of all cluster activities in the region to the Provincial Coordinating Committee. For samples of the various forms see annexure.

10.1.4 Workshop Materials

Workshop materials shall serve two purposes:

- ✓ They shall serve as an indication of the quality of the content of the INSET activity conducted.
- ✓ The collection of workshop materials shall promote the principle of collaboration. Workshop materials used by various schools or clusters during workshops or seminars shall be made available to other schools and/or clusters for use.

The Heads of Department – Natural Sciences and Mathematics shall keep copies of INSET materials used to conduct INSET at their schools; Cluster leaders will do the same at cluster level.

10.1.5 Evaluation forms

At the end of each workshop participants shall be requested to fill in evaluation forms. These forms shall be used to improve future activities of school based and cluster INSET activities.

10.1.6 Visits by Curriculum Implementers

Curriculum Implementers shall from time to time visit school-based and cluster INSET activities to give support as outlined in section 8.3 and 8.4. CIs shall be required to write reports about their impressions of the activities observed.

10.2 Evaluation

Evaluation is an ongoing process that entails:

- ✓ exploring the effectiveness of the activities of MSSI,
- ✓ improving the activities of the project
- ✓ justifying the need of in-service training in mathematics and natural science as envisaged in MSSI.

The question of what to evaluate, the purpose for such an evaluation as well as the sources used in evaluation are crucial factors in determining the course of action to be taken in improving the effectiveness of the project. The process of evaluation necessitates that different and interacting aspects of the project must be observed, studied recorded and analysed. Multiple sources of data are essential for the complete picture of the impact of the project in teaching and learning of mathematics and natural science as envisaged by the project.

The question of when to evaluate and who evaluates are also very crucial aspects if we want to form an objective view of the success or failure of the project.

The following principles shall guide the process of evaluation:

- ✓ Multiple data sources must be used in gathering information about the impact of the project.
- ✓ All the stakeholders involved in the project must understand the process of evaluation.
- ✓ The results of the evaluation process must be used to improve the activities of the project.
- ✓ Evaluation must be congruent with the goals set.
- ✓ The results of evaluation must be disseminated to all role-players in the project as well as other interested parties.
- ✓ Evaluation must be consistent and continuous (periodically)

11 Support from Japanese International Cooperation Agency (JICA) and volunteers, University of Pretoria (UP) and Mpumalanga Department of Education (MDoE)

11.1 JICA

Presently the Japanese government (through Japanese International Cooperation Agency JICA) provides:

- Financial and organizational support for CIs/CLs and Local Administration and management personnel to train in Japan
- Follow-up guidance for organizing workshops for HODs/Subject Heads
- Facilities – build schools
- Equipment – for teacher centers
- Project coordinator for MSSI
- Volunteers teachers for secondary mathematics and science.
- Support personnel during workshops

Japanese Overseas Cooperation Volunteers can be used as subject specialist at teacher centers to support mathematics and natural science educators. They can be invited to attend cluster and school-based INSET activities, conduct workshops, provide innovative advices and share experiences.

We feel that JICA can play a role in providing incentives to top participants of regional or provincial cluster activities like offering the opportunities to further academic studies in mathematics and natural science in Japan.

11.2 University of Pretoria

HODs/CLs should be proactive in utilizing the support and expertise of UP in all cluster activities. For example inviting UP experts to observe cluster or school-based INSET frequently. UP could offer educators the chance to be co-researchers in many research studies (educational research) they conduct. This may give educators the opportunity to

obtain further accreditation. UP should continue to broaden its research studies on the project. Such ongoing evaluations of the project are necessary to establish relevance of INSET activities as well as measuring the impact on learners' achievements.

11.3 Mpumalanga Department of Education

MDoE is the initiator and owner of MSSI. For successful implementation and sustainability of the project all stakeholders (within the department) should be represented in the steering committee. The department should recognize circuits as the basic units of operation for cluster activities. This will imply that Circuit Managers and Principals must play a more active role.

Since complete ownership of the project solely lies with the department, it is crucial that the department should gradually phase in funding responsibilities and capacity building so that withdrawal of the other partners will not mean the demise of MSSI project.

12 Challenges facing stakeholders

CHALLENGES	RESPONSIBLE OFFICER (S)
Communication - Writing/fax/physical mobility/telephonically	Principal/CM/CI
Report writing and submission	Principal/CI
Time	**Principal/educators**
Reluctance and absenteeism of colleagues	Principal/SGB/Dept - Steering committee
Paradigm shift	Principal/CL/CI
Networking with other CLs	Principal/CI
Lack of support from stake holders	Steering committee
Transport.	Principal/Dept - Steering committee
TC not functioning, distant or not resourced)	Principal/CI/Dept - Steering committee
Bringing on board other stakeholders.	Principal/CL/CI/ Steering committee
Finance to run workshops	Principal/Steering committee
Ownership of project	All- Steering committee
Workload on HODs/CLs	Principal/educators
Subject specific Qualification	Dept/JICA/UP
Location of schools	Dept
Overtime, weekends and holidays	Dept/CL/educators
Registration of schools into cluster	Principal/CL/CI/DEPT
Conducting needs analysis	Principal/CL/CI
Plan of action for coordination of activities within the MSSI and with other projects	CL/CI/MDoE
Bringing grade 7, distant and disadvantaged schools on board the project	Principals/CL/CI/MDoE
What to do with schools that are not yet involved with the project	MdoE/ Principals/CL/CI

13 **Workshops (proposed)**

As per the cascading model (see page 4) the following workshops have been proposed.

Report back session (suggested time 2 days) Science	Meeting with the Local administration group Report back and clarification of roles

1st workshop	Chemistry lesson study laboratory procedures classification and properties of household substances (chemsitry at home)
2nd workshop	Physics Light and electricity
3rd workshop	Earth and Beyond (Weathering and functions of rivers) Life and living (Observation and classification) (Cell division)

Mathematics

1st workshop	Grade
Mountaineering, lesson study	8 – 12
Congruency	8 – 12
Paper folding 3D	8 – 12
2nd workshop	
Similarity and paper size	8 – 12
Sharing meeting of CLs	
Tangrams	8 – 12
Teaching of functions (drawing	
And interpretation of graphs →	
Linear prorams	8 – 12
3rd workshop	
Trigonometry (Introduction)	10
Computer Training (number system)	

14 The Framework for the MSSI workshop for CIs /CLs/HODs 2003

The activities for MSSI would be informed by the cluster guideline that was drawn in Hiroshima (Japan), the interaction with all stakeholders in Nelspruit (Febuary 2003) and the needs analysis survey. The structure for the workshop would be as follows:

Report back session (Febuary 2003)

Report back session by CLs and CIs – Febuary 2003
Outcomes:
To report on the Japanes experiene and the accrued experiences by the CL cum CI team to Japan.
To discuss guideline document on cluster formation and implementation
Discuss MSSI implementation in phase II
Discuss monitoring and evaluation of the project
To interact with all stakeholders in the project and outline/clarify our roles and functions
Share workshop planes and implementaion scedule for 2003
Plan the logistics of implementation programs

Workshop 1
Theme: Material development and the use of available resources March 2003
Outcomes: A meaningful understanding and practice of lesson study, some laboratory skills and the use of household substances to teach chemistry

Workshop 2
Theme: Material development and the use of available resources May 2003
Outcomes: Designing and development of different teaching materials
Exploring of the activities carried out in Japan
More on lesson study

Workshop 3
Theme: Material development for cluster and school-based activities September 2003

Outcomes: Fostering networking amongst, CLs, CIs and all other stakeholders
Strengthening of school-based activities
Emphasis on scientific approach to teaching and learning

15 Tentative Schedule for 2003 (Draft)

DATE	TIME	ACTIVITY	PARTICIPANTS	VENUE
27th Jan – 7th Feb	8H30-16H30	MSSI workshop	CLs/HODs and CIs	Former Districts
14th –15th Feb	8H30-16H30	Report back session	All CIs, CLs, UP, MDoE and JP	Nelspruit
20th –22nd Mar	8H30-16H30	CLs/HODs workshop	CLs/HODs and CIs	Regions
20th Apr	10H00-13H00	Reflection meeting	All CIs and CLs, UP, MDoE and JP	Middleburg
To be confirmed	10H00-13H00	Steering committee meeting	All stakeholders in the Department of education	Nelspruit
30th Jun- 4th Jul	8H30-16H30	CLs/ CIs 2nd round workshop	All CIs, CLs, UP, MDoE and JP	Ermelo
16th – 18th Jul	1330-16H30	Cluster support workshop	CLs and HODs	Regions
1st Aug	10H00-13H00	Reflection meeting	All CIs and CLs, UP,MDoE and JP	University of Pretoria
18th – 22nd Aug	8H30-16H30	CIs/CLs 3rd round workshop	All CIs, CLs UP, MDoE and JP	Volksrust
10th –12th Sep	8H30-16H30	CLs HODs support workshop	CLs and HODs	Regions
01st Oct	10H00-13H00	Reflection meeting	All CIs and CLs, UP, MDoE and JP	Nelspruit
To be confirmed	10H00-13H00	Steering committee meeting	All stakeholders in the Department of education	Nelspruit

Annexure A

MPUMALANGA DEPARTMENT OF EDUCATION

APPLICATION FOR CLUSTER REGISTRATION (MSSI)

Name of cluster .....

Name of school: .....

Name of Principal .....

Name of HOD/subject head .....

Contact number: .....

Fax: .....

Email .....

Postal Address:.....

Pledge/commitment from school to:

- implement in our classes all instructional innovations and materials acquired in cluster activities and provide feedback
- submit reports as stipulated in the cluster policy
- attend all MSSI activities consistently
- agree to host cluster activities
- share resources and expertise

.....	.....	.....
HOD	**PRINCIPAL**	**CIRCUIT MANAGER**
STAMP	**STAMP**	**STAMP**

Annexure B

MPUMALANGA DEPARTMENT OF EDUCATION

NEEDS ANALYSIS FORM: MATHEMATICS AND NATURAL SCIENCE EDUCATORS

Introduction

This needs analysis is not an instrument to be used against any educator. The purpose could be summarized as follows:

- To ensure that workshops that are held (school, regional or circuit) level are seen to address the actual needs of educators.

- That teacher center programs reflect what you require for your work at school

- To ensure ownership of cluster programs and hence full participation of all mathematics and science educators.

Finally we solemnly give the undertaking that the findings of this needs analysis will in no way be used against any educator but will help us in addressing teaching and learning challenges.

Name of school: .....

Contact number: .....

Name of cluster .....

Learning area: .....

Name of educator (**OPTIONAL**) .....

(a) Indicate your strong areas.

GRADE	SECTION/TOPIC	CONTENT/METHODOLOGY

(b) Indicate areas you are willing to share your knowledge, skills or expertise with other educators.

.....

.....

.....

.....

.....

(c) Indicate areas that you need improvement in.

GRADE	SECTION/TOPIC	CONTENT/METHODOLOGY

(d) Please indicate resource person(s) whom you think could help address the above-identified challenges.

.....

.....

(e) Could you indicate other needs that you think should be addressed to make you more empowered? You could also identify resource person(s) to deal with these issues.

.....

.....

.....

.....

.....

.....

.....

.....

.....

Thank you for taking time to complete this form.

Annexure C

MPUMALANGA DEPARTMENT OF EDUCATION

SUMMARY REPORT ON CLUSTER ACTIVITIES

1. NAME OF THE CLUSTER..... .....

2. NAME OF THE CLUSTER LEADER.....

3. DATE: | 2 | 0 | | | YEAR | | | MONTH | | | DAY |

4.

DATE	ACTIVITY/TOPIC	VENUE	FACILITATOR	M/NS M&NS	NUMBER OF PARTICIPANTS

5. .....
CLUSTER LEADER'S SIGNATURE

6. .....
CIRCUIT MANAGER'S SIGNATURE

STAMP

Annexure D

MPUMALANGA DEPARTMENT OF EDUCATION

SUMMARY REPORT ON SCHOOL-BASED INSET ACTIVITIES

1 NAME OF THE SCHOOL……

2 NAME OF THE HOD……..

3 DATE: | 2 | 0 | | | YEAR | | | MONTH | | | DAY

4.

DATE	ACTIVITY/TOPIC	FACILITATOR	M/NS M&NS	NUMBER OF PARTICIPANTS

. …… ……

PRINCIPAL'S SIGNATURE H.O.D'S SIGNATURE

STAMP

Annexure E

MPUMALANGA DEPARTMENT OF EDUCATION

EVALUATION FORM: SCHOOL-BASED AND CLUSTER INSET

Date of workshop:.....

Venue:.....

Facilitator:.....

Please indicate by a tick or cross in the boxes below for example: ☒ YES

1. Did you get information on the objectives and content of the workshop before coming to the workshop? ☐ YES ☐ NO

2. How do you evaluate the workshop?

2.1 coverage of the subject/concept

☐ Too broad ☐ just right ☐ too narrow

2.2 depth

☐ Too deep ☐ just right ☐ too shallow

2.3 logical order of the workshop activities

☐ Good ☐ fair ☐ poor

2.4 relevance of the workshop to your needs

☐ Good ☐ fair ☐ poor

2.5 Where your expectations on the workshop met?

Fully met	somehow met	never met

3. Allocation time to different activities

3.1 facilitator's talk	too much	just right	too little
3.2 discussions	too much	just right	too little
3.3 exercises	too much	just right	too little
3.4 to reflect	too much	just right	too little

4 What was most beneficial?

.....

.....

.....

4. How can the workshop be improved?

.....

.....

.....

Thank you for taking time to complete this questionnaire.

Appendix 3

Executive Summary

The Mpumalanga Secondary Science initiative (MSSI) is a project of the Mpumalanga Department of Education (MDE) that aims at improving the teaching of mathematics and science in secondary schools through establishment of a province-wide system of in-service education and training (INSET) for teachers. The project was started in November 1999 with financial and technical support from the Japan International Cooperation Agency (JICA) and the University of Pretoria (UP). It is coming to its close at the end of March 2006 after two phases of work targeted at M & S teachers in all secondary schools (Grade 8 – 12) in the province.

The project has a number of characteristics, such as tripartite partnership involving a foreign donor and a local university, cascade model of INSET targeted at all teachers in all secondary schools (rather than selected teachers in pilot model schools), promotion of peer teacher collaboration and reflection, patterned after the corresponding Japanese practices (Please see the summary box). An external evaluation* conducted at the end of the first three-year phase of the project in September 2002 found that Phase 1 "has provided an excellent opportunity for the development of a unique INSET model that should be refined during the second phase of the initiative." The present evaluation has been organized by the three collaborative partners of the project as a 'joint reflection' of the achievements made and the challenges still lying ahead, as well as of the possible ways to further strengthen the department's effort to build the INSET system. As such, this is an internal evaluation of a formative nature.

The project intervention consisted of annual implementation of a material development exercise, followed by three rounds of cascade-based INSET targeted at leading teachers from schools, who, in turn, would implement INSET activities at their respective schools. The primary contribution to MSSI by JICA has been the annual organization of a training course for 10 MDE M & S educators, who learn about the Japanese experience in M & S education development and engage in material development and elaboration of INSET plans for the project. JICA has also organized another annual course for several senior managers of MDE to learn about the Japanese educational development and to develop plans to support MSSI. The total number of participants so far is 71 for the M & S educator course and 45 for the senior managers course. One important aspect of these training courses has been the exposure of these participants to different practices of Japanese educators, such as lesson study and other peer group exercises and the practice of group reflection, which have become the unique features of the project. The contribution of UP has been to provide technical backstopping for the project activities in the country, through the preparation of study guides and refinement of technical guidebooks, technical guidance for workshops and conducting of research on project implementation. UP researchers have conducted considerable amount of research on the Japanese educational development experiences and also accompanied the training for M & S educators in Japan, which facilitate their role as a technical guide in the partnership.

The MSSI project made a major change in its cascade training mechanism during its transition from Phase 1 to Phase 2. In 2002 MDE reorganized its structure of administration from 10 Districts to 3 Regions, and divided the Curriculum Section into

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* "An Evaluation of the First Phase of the Mpumalanga Secondary Initiative (MSSI)" conducted by Dr. Zenda Ofir (Evalnet), Pretoria, September 2002.

GET Phase (Grades 1 – 9) and FET Phase (Grades 10 – 12). To cope with these changes, the focus of cascade training was shifted from school-based INSET promoted through District-level training workshops for M & S heads of department from schools in Phase 1, to cluster-based INSET organized by peer teachers from neighboring schools whose leaders (Cluster Leader/CL) will be convened for regional-level leader workshops. The structural change was also accompanied by shifting of assignments and posts for some of the leading CIs. These changes required major adjustments in the working of the cascade training mechanism. The altered mechanism based on clustering of schools began to take shape in 2003 and MDE decided in 2004 to make it an official policy of the department not only for M & S but also for other subject areas.

Given these developments and the consequent delay in reorganization of the INSET monitoring mechanism, it has not been possible to compile systematic data to permit a full and accurate assessment as to how far MDE has advanced in establishing an INSET system. This joint evaluation has conducted extensive interviews with many stakeholders at all levels and arrived at the following conclusions:

- Cascade model of training has been re-initiated with the focus on stimulating cluster-based INSET activities. M & S Curriculum Implementers are beginning to work with the Cluster Leaders, though their impact is still limited. Some of the newly recruited CIs are in need of training for contents enrichment and teaching skills improvement.

- Cluster activities by M & S teachers are taking place in all the circuits of the province, some more frequently and more actively than others. However, the mainstay of these activities are not INSET-related but for moderation of continuous assessment and other administrative work. The activity level seems to be particularly low for GET clusters.

- There are some clusters which have made some significant headway in developing cluster-based INSET activities. In these clusters there is observed both strong leadership and active participation by the participating schools. They also receive support from their schools, and call on CIs to seek technical support. However, inter-cluster sharing of their experiences so far has been limited to their case presentation at CL workshops.

- The link between cluster-based INSET and school-based INSET has not yet been established in most schools. However, some schools which have made substantial progress with school-based INSET during Phase 1 are maintaining their commitment to improvement of classroom teaching of M & S. Their teachers have not only improved content knowledge and teaching skills but also acquired positive attitudes and behavior. The key factor for these successful schools appear to be the principal's leadership.

- The senior management of MDE is aware of the positive impact the MSSI project has had on the department through the spreading the notion of peer teacher learning and the practice of group reflection, and is deeply committed to the pursuit of INSET system building work.

MDE realizes that the department is still a long way from establishing a province-wide system of INSET for the secondary M & S teachers, and has elaborated a sustainability strategy for further promotion of the system-building effort (Please see

Appendix 3). In support of this continued work, the joint evaluation makes the following recommendations to MDE:

1. Establishment of a Math and Science Coordinating Committee
2. Rebuilding of the monitoring mechanism for cluster-based and school-based INSET
3. Institution of a training program to strengthen the contents knowledge and teaching skills of the M & S Curriculum Implementers (CIs)
4. Improving the effectiveness of Cluster Leaders
5. Provision of regional office support for the cluster-based INSET activities
6. Improving the functional utility of the Education Development Centers
7. Development of a 'culture of continuous improvement' at schools through involvement of the school leaders
8. Integration of M & S INSET initiative with MDE systems through elaboration of an INSET policy
9. Holding of an annual provincial meeting to share exemplary practices in M & S education

The joint evaluation also recommends to the University of Pretoria the following: (i) Continuation of the collaborative partnership with MDE, (ii) cooperation in the preparation of guidebooks on lesson study approach, and (iii) establishment of a Research Unit on Lesson Study. It further recommends to the Japanese partners: (i) extension of the JICA Training Course for M & S Educators, (ii) alignment of the work of the JOCV volunteer teachers to the needs of MDE, (iii) continued dialogue between JICA and MDE on educational cooperation, and (iv) research commitment by the Japanese Universities.

Mpumalanga Secondary Science Initiative (MSSI)

Goal: Improved classroom teaching of secondary M & S for enhancement of learner understanding
Aim: Development of a province-wide system of in-service education and training (INSET) for secondary M & S teachers
Duration: November 1999 - March 2006
Partners: Mpumalanga Dept. of Education (MDE)
Japan International Cooperation Agency (JICA)
University of Pretoria (UP)
Target: M & S teachers in all secondary schools (Grades 8-12) in the province

Characteristic approaches:
- Promotion of INSET for teacher capacity improvement and curriculum reform
- Tripartite partnership approach for project planning, management and implementation
- Cascade model of training targeted at cluster- and school-based INSET
- Development of a peer teacher learning approach to improvement of classroom instruction, employing a 'lesson study' approach adopted from the Japanese practice
- Widespread use of the practice of reflection

Appendix 4

FACILITATORS'GUIDE FOR THE MSSI REGIONAL WORKSHOPS

Activities for day one

Workshop Presenters: Prof. Kita , Prof. Ono, Dr. Jita & T. Ndlalane.

9.30 - 945 What is MSSI and what are the aims and objectives of the project will be shared with the participants. A person who understands the goals and the aims of the project should do this task. Achievements in phase one will be shared and the weaknesses in phase one that led to phase two changes. Partnership and roles should be highlighted during this presentation.

9.45 – 10.00 Purposes of the session will be highlighted on the OHP transparency and the participants will be taken through.

10 – 10.30 The roles and the tasks of the clusters in changing classroom practice. This will be done through brainstorming and reflecting on the daily tasks of the cluster leaders. Input from cluster leaders is important.

11.00 – 12.00 Examples of cluster activities will be issued to the cluster leaders and the curriculum implementers are expected to do the following:

- Help cluster leaders to form groups as according to their specialization in the four themes of natural sciences and one group for mathematics.
- The curriculum implementer to issue a A4 paper to each cluster leader
- Ask each cluster leader to write the topic on discussion on the top of the paper, e.g. Energy, Seed, etc.
- Make sure that the cluster leader write his/her responses and submit the paper to the curriculum implementer, who will submit it to the presenters.
- The curriculum implementer will then issue a Koki pen and a flip chart paper to the group.
- The cluster leader to facilitate the discussion in a group and encourage all the leaders to participate.
- One of the leaders will be a scriber and one will report on behalf of the group.
- The curriculum Implementer will then collect the flip chart paper from his group and submit it to the presenters.

12.00 – 12.30 The cluster leaders will be taken through the process of facilitation. The focus will be on the skills used at this workshop.

1.30 – 2.00 Lesson plan discussion (Framework)

Appendix 5

Programme for the 2nd MSSI provincial workshop 2004

Venues: Riverside Complex

Day	Date	Time	Session	Responsibility
1	21 June (Mon)	A.M.	Arrival at the Riverside Govt. Complex	
		09:30	**Tea**	
		10:30	Welcome + Purpose of the workshop **(Room 2/3, Whole day)**	V Mkhwanazi
		11:00	Feedback on Cluster Activities * Report from regions * Univ. of Pretoria	C. Mtetwa
		13:00	**Lunch**	
		14:00	Discussions on Cluster Activities (cont)	T Ndlalane
		15:30	Introduction of monitoring format	L. Mogoane
		16:30	Reflection (H/O, UP, JICA)	K Maremane
2	22June (Tue)	08:00	Review of progress Today' schedule	DCES
		08:15	Content enrichment (Introduction of study guides)	DCES / Experts
		10:00	**Tea**	
		10:30	Content enrichment (continued)	DCES / Experts
		13:00	**Lunch**	
		14:00	Content enrichment (continued)	DCES / Experts
		16:30	Reflection H/O, UP, JICA, 1 CI per sub-group	K Mohan
3	23June (Wed)	08:00	Review of progress Today's schedule.	DCES
		08:15	Content enrichment	DCES / Experts
		10:30	**Tea**	
		11:00	Planning for Cluster Leaders workshops	DCES / Experts
		13:00	**Lunch**	
		14:00	Planning continued	DCES / Experts
		15:00	Reflection (H/O, UP, JICA, ROC's) Departure **(Room 2/3)**	Dr. F Khumalo

Appendix 6

Post - Cluster Meeting Questionnaire

As part of providing support to the cluster activities of the Mpumalanga Department of Education (MDE), the University of Pretoria is collecting feedback on all cluster sessions and suggestions for improvement. Your responses to the following questions are therefore critical for the improvement of the cluster approach as a whole. Your names and schools are needed only for research purposes and will NOT be divulged in any correspondence with the MDE.

Name: _____

School: _____

Cluster Name: _____

Question 1

How did you find out about today's meeting?

_____

_____

Question 2

What was/were your major reason(s) for attending today's meeting?

_____

_____

Question 3

What were your expectations for today's meeting? Please elaborate.

_____

_____

_____

Question 4

Did today's session meet your expectations? Why/Why not? Please elaborate.

_____

_____

_____

Question 5

What would you like to see done differently? Why/Why not?

_____

_____

Question 6

How will you use the information from today's session in your classroom? Please be specific about the topics, activities, materials/hand-outs, etc and how you will use these in your own classroom (please use the back of this page, if you need more space)

_____

_____

University of Pretoria: Joint Centre for SMTE

SECTION A

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1. Which of the following activities related to the tasks and functions of curriculum implementers have you participated in during the past three months (i.e. April, May and June)? Indicate approximately how many times you engaged in each activity:

	4 times	3 times	1 or 2 times	Not yet done
a) Observe a cluster meeting in progress	☐	☐	☐	☐
b) Visit a school for classroom observation in my subject	☐	☐	☐	☐
c) Conduct a workshop/meeting with **all** Cluster leaders in my region.....	☐	☐	☐	☐
d) Delivery of LSM to schools.....	☐	☐	☐	☐
e) Conduct a workshop/meeting with **all** the teachers in the schools for which I am responsible.....	☐	☐	☐	☐
f) Design and development of LSM at regional Or local level.....	☐	☐	☐	☐
g) Attend a class or course in science/maths as Part of my own personal development.....	☐	☐	☐	☐

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2. If you have conducted a workshop or participated in a cluster meeting, which of the following best describes the <u>focus</u> and <u>frequency</u> of your engagement during these activities?

	4 times	3 times	1 or 2	Not yet Done
a) Help teachers with portfolios	☐	☐	☐	☐
b) Assist teachers in doing CASS....	☐	☐	☐	☐
c) Conduct OBE/RNCS training.....	☐	☐	☐	☐
d) Teach a demonstration/model lesson.....	☐	☐	☐	☐
e) Discuss specific subject content ...	☐	☐	☐	☐

f) Please specify the **<u>topic</u>** and describe briefly what you **<u>did/said</u>** during the discussion in (e)

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g) Discuss the MSSI study guides ... ☐ ☐ ☐ ☐

h) Please specify the **<u>actual topic(s)</u>** and describe briefly what **<u>activities</u>** (from the guide) you did during the meetings described in (g)
