

添付資料

1. 協議議事録
2. 調査日程
3. 主要面談者
4. 要請機材リスト
5. 教育省組織図
6. 高等教育委員会・高等教育局組織図
7. ゴロカ大学における IT 開発
8. ゴロカ大学組織図
9. 委員会の名称・役割
10. 委員会の階層構造図
11. カリキュラム（科目構成）*
12. 2000～2002 年支出と 2003 年予算
13. 部門別 2003 年予算
14. 部門別 2001 年支出実績
15. 光熱費、施設メンテナンス費の内訳（2001 年支出実績）
16. 既存機材リスト
17. 新図書館平面図
18. 新多目的講堂平面図（参照用）
19. 収集資料リスト

MINUTES OF DISCUSSIONS
PREPARATORY STUDY
ON THE PROJECT FOR IMPROVEMENT OF EDUCATIONAL EQUIPMENT
FOR THE UNIVERSITY OF GOROKA
IN PAPUA NEW GUINEA

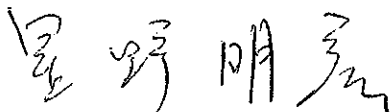
In response to a request from the Government of Papua New Guinea (hereinafter referred to as "PNG"), the Government of Japan decided to conduct a Preparatory Study on the Project for Improvement of Educational Equipment for the University of Goroka (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to PNG the Preparatory Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Akihiko HOSHINO, Staff, Planning Division, Grant Aid Management Department, and is scheduled to stay in the country from January 28, 2003 to February 25, 2003.

The Team held discussions with the officials concerned of the Government of the PNG and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets.

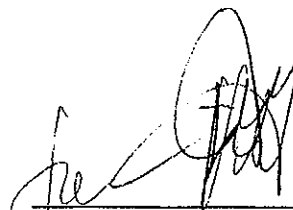
Port Moresby, February 5, 2003



Mr. Akihiko HOSHINO
Leader
Preparatory Study Team
Japan International Cooperation Agency



Dr. Musawe Sinebare
Acting Vice Chancellor
University of Goroka



Mr. Mosilayola Kwayaila
First Assistant Secretary
Aid Coordination & Management Division
Department of National Planning
& Rural Development

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the educational equipment currently available at the University of Goroka

2. Project site

The site of the Project is at Goroka in Eastern Highland Province.

3. Responsible and Implementing Agency

The responsible and implementing organization is the University of Goroka. The organization chart is attached as Annex-1.

4. Items requested by the Government of PNG

After discussions with the relevant stakeholders of PNG, the following equipment have been requested by PNG;

- Equipment for Multipurpose Lecture Theater
- Equipment for Library (including Printery Section)
- Equipment for Audio Visual Unit
- Equipment for Language Laboratory and Computer Laboratory
- Equipment for Science and Agriculture education
- Equipment for Expressional Arts education

The detailed equipment list shall be prepared and submitted to the Team by the PNG side by February 14, 2003. Then, JICA will assess the appropriateness of the contents and will report the findings to the Government of Japan.

5. Japan's Grant Aid Scheme

5-1 The PNG side understands the Japan's Grant Aid Scheme explained by the Team, as described in Annex-2.

5-2 The PNG side will take the necessary measures, as described in Annex-3, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6. Nature of the Study

The PNG side understands the nature of the preparatory study and that no commitment of the implementation of the Project including a basic design study could be made by the Japanese side. Therefore the Team will proceed to further study in Japan. As a result of the preparatory study, the Government of Japan will decide whether to conduct a Basic Design Study of the Project.

7. Other relevant issues

7-1 Explanation on the Background of the Project by PNG side

Because of the rapid improvement of access to primary and secondary education, it is an urgent necessity of the day to deploy a sufficient number of qualified teachers to primary and secondary schools. As the University of Goroka is the only institution to provide pre-service training for expected secondary school teachers, it has been expected to accept more students and provide them with quality education. However, shortage and obsolescence of the facilities and equipment have hindered it from fulfilling the expected outcome. Although the University of Goroka has constructed a new multipurpose lecture theater and a library to overcome the shortcomings, the installation and replacement of equipment is still required. Under such circumstances this project has been requested by the Government of PNG.

7-2 Explanation on Rationale of the Project by the PNG side

The PNG side explained that the contents of the Project were in accordance with the curriculum and the future development plan of the University of Goroka. The equipment requested in the project will be fully utilized for the pre-service and in-service education. The University shall be responsible for the management and maintenance of the equipment by securing the necessary budget and keeping the number of quality staff at the ideal level. The Department of National Planning and Rural Development, the responsible agency in national development also confirmed to make full support for the preparation and implementation of the project.

7-3 Major observation by the Team

- 1) Most equipment requested will contribute not only to the teacher education but also to the enhancement of the functions of the University of Goroka (UOG), which has been justified in the Master Plan Phase I of the UOG. However, the objectives and needs of the provision of the equipment shall be made clear in the succeeding study.
- 2) The management of facilities and equipment is the most critical issue in the implementation of the project on the equipment provision. UOG has consistently maintained the existing equipment and facilities in good conditions since its establishment in 1964. However, since UOG recognizes that it is facing the difficulties of funding, it needs to make as much effort as possible to continue the proper management and necessary maintenance by utilizing every available resource.
- 3) The Team made a comment that it was advisable for UOG to give much attention to the security management and control on the equipment which might be installed. The UOG replied to take some possible measures for that.
- 4) The PNG side requested the Team to include the educational equipment on Science and Agriculture education and the Team answered to convey this additional request to the Government of Japan.

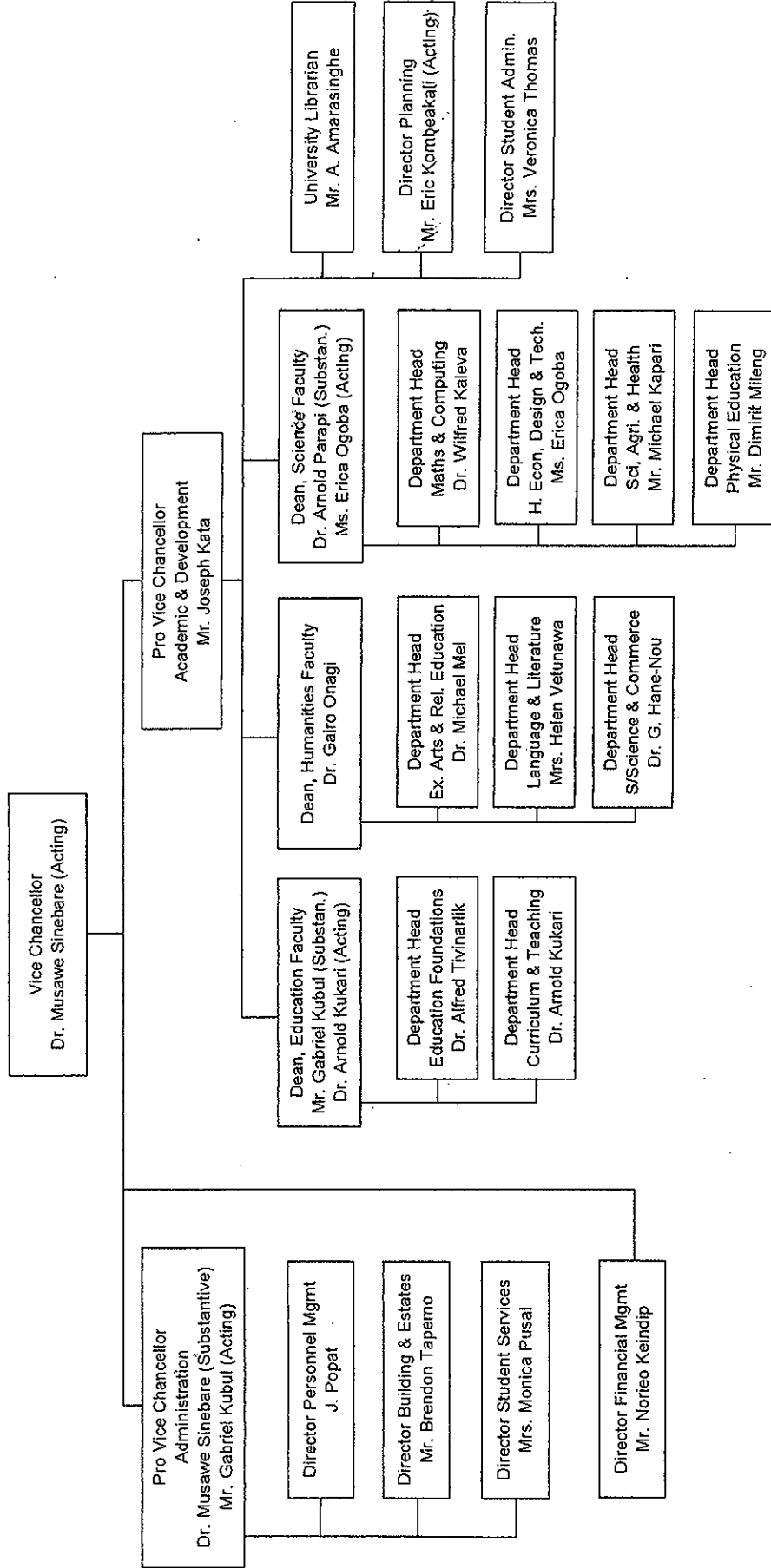
5) The Team has received further request on the technical assistance such as Senior volunteers on AV system attached to AV Unit of UOG or Technical Trainings on AV in Japan. The Team also answered to convey this request to the Government of Japan.

7-4 Reply to the Questionnaire

The PNG side agreed to provide the answer and the information described in the questionnaire by February 7, 2003.

- Annex-1 Organization Chart
- Annex-2 Japan's Grant Aid
- Annex-3 Major Undertakings to be taken by Each Government

Administrative Structure, The University of Goroka



Handwritten signatures and initials:
 [Signature] [Signature] ah

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japan's Grant Aid Scheme is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of	(The Notes exchanged between the Governments of Japan
Implementation	and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for the Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed (E/N) by the Governments of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in

such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of a Basic Design of the Project
- Estimation of cost of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon the terms of reference set by JICA.

The consulting firm(s) used for the Study is (are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely, consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

5) Undertakings required to the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following.

- To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction,
- To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- To secure buildings prior to the procurement in case the installation of the equipment,
- To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

6) "Proper Use"

The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

8) Banking Arrangement (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to the

Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

9) Authorization to Pay (A/P)

The government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

25 ah
87

Major Undertakings to be taken by Each Government

Annex-3

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	(•)	(•)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		•

ZE ah
Bj

調査日程

	日付	曜日	星野 明彦 (団長)	番 義弘 (機材計画)	曾武川 建 (教育計画)
1	1月27日	月	Tokyo >> (JL767 20:05)	同左	同左
2	1月28日	火	>> Cairns (JL767 04:45) Cairns >> Port Moresby (QF381) JICA事務所表敬・打合せ、大使館表敬		
3	1月29日	水	計画地方開発省会議 教育省協議 高等教育省協議	同左 教育省メディアセンター視察・協議	同左
4	1月30日	木	Port Moresby >> Goroka ゴロカ大学協議、現場視察	同左	同左
5	1月31日	金	ゴロカ大学協議、現場視察	同左	同左
6	2月1日	土	団内打合せ	同左	同左
7	2月2日	日			
8	2月3日	月	ゴロカ大学ミニッツ協議、状況調査	同左	同左
9	2月4日	火	Goroka >> Port Moresby ゴロカ大学ミニッツ協議、JICA事務所打合	同左	同左
10	2月5日	水	ミニッツ署名 大使館報告、JICA報告	同左	同左
11	2月6日	木	Port Moresby >> Tokyo (QF384+JL768 09:30/18:45)	機材調達関連調査 UPNG類似施設調査	遠隔教育調査 UPNG施設見学
12	2月7日	金		Goroka >> Lae UNITEC類似施設調査 Lae >> Goroka	同左 UNITEC施設見学、遠隔教育調査 同左
13	2月8日	土		機材調達関連調査、収集資料解析	収集資料分析
14	2月9日	日		Port Moresby >> Goroka	同左
15	2月10日	月		ゴロカ大学調査	ゴロカ大学調査
16	2月11日	火		ゴロカ大学調査	ゴロカ大学調査、小学校見学、中等 学校見学
17	2月12日	水		ゴロカ大学調査	ゴロカ大学調査、ゴロカビジネスカレ ン教育内容調査
18	2月13日	木		ゴロカ大学調査	ゴロカ大学調査、基礎学校見学
19	2月14日	金		ゴロカ大学調査	ゴロカ大学調査
20	2月15日	土		ゴロカ大学調査	ゴロカ大学調査
21	2月16日	日			
22	2月17日	月		ゴロカ大学調査	ゴロカ大学調査
23	2月18日	火		ゴロカ大学調査	Goroka >> Port Moresby
24	2月19日	水		ゴロカ大学調査、調達関連調査	PNGEI訪問—情報収集、質問票回答 につき高等教育局協議
25	2月20日	木		ゴロカ大学調査	AusAID、CODE訪問—情報収集
26	2月21日	金		Goroka >> Port Moresby 収集資料整理・解析	PASTEP本部訪問—情報収集、質問 票回答につき教育省協議 計画地方開発省訪問— EU,ADB,World Bank情報収集
27	2月22日	土		資料整理解析、報告書作成	同左
28	2月23日	日		資料整理解析、報告書作成	同左
29	2月24日	月		調達関連調査 大使館報告、JICA報告	計画地方開発省訪問— EU,ADB,World Bank情報収集 同左
30	2月25日	火		Port Moresby >> Tokyo (QF384+JL768 09:30/18:45)	同左

UPNG: University of Papua New Guinea
UNITEC: University of Technology
CODE: College of Distance Education

AusAID: Australian Agency for International Development
PASTEP: Primary and Secondary Teacher Education Project
EU: European Union, ADB: Asian Development Bank

主要面談者

1. JICA 事務所

齋藤克郎所長

鯉沼真里所員

Mr. Tony Ombo 所員

Mr. John Kol 所員

2. 日本大使館

田中辰夫駐パプアニューギニア特命全権大使

清水俊二一等書記官

3. 計画地方開発省 (Department of National Planning & Rural Development)

Mr. Paul Enny, Assistant Secretary, Bilateral Branch, Aid Coordination & Monitoring Division

Mr. Noel Geti, Senior Coordination Officer, Japan Desk, Bilateral Branch, Aid Coordination & Monitoring Division

Mr. Atsuo Susami, Project Formulation Advisor (JICA)

Mr. Jethro Apinas, Senior Programmes Officer, Aid Coordination & Monitoring Division (European Desk)

Mr. Koraea Kingsley Lore, Senior Aid Coordination Officer, Aid Coordination & Monitoring Division (ADB/World Bank Desk)

4. 教育省 (Department of Education)

Mr. William Penias, Acting Secretary, Standards & Human Resources

Mr. Joseph Pagelio, Acting Deputy Secretary, Standards & Human Resources

Mr. Tani Karo, Coordinator, Planning Division

Mr. Jerry Kuhena, Commissioner Policy, Teaching Service Commission

Mr. W. Wingi, Director, Staff Development Unit

中村 憲 (専門家・教育セクターアドバイザー)

伊藤明德 (専門家・教育番組制作)

八田恒平 (青年海外協力隊員・視聴覚教育)

5. 高等教育局 (Office of Higher Education)

Dr. Philip Kereme, Director General

Mr. Ted Alau, Director, Higher Education Support

Mr. David Glama, Executive Officer

Dr. Obira Binug, Acting Director, Institutional Development Branch

Mr. Willian Tagis, Acting Director, Policy Planning and Development

6. ゴロカ大学

Dr. Musawe Sinebare, Acting Vice Chancellor

Mr. Joseph Poimb Kata, Pro Vice Chancellor, Academic & Development
 Mr. Gabriel Kubul, Acting Pro Vice Chancellor, Administration
 Mr. Eric Kombeakali, Acting Director Planning
 Dr. Michel Mei, Department Head, Expressive Arts & Religious Education
 Mr. Spama Runialo, Lecturer, Education Technology
 Mr. Kal Onguko, Chief Technical Officer
 Ms. Helen Vetunawa, Department of Head, Language & Literature
 Dr. Lynus Yamuna, Lecturer, Language & Literature
 Dr. Wilfred Kaleva, Head of Department, Mathematics & Computer Science
 Dr. Roland Treu, Science Section Coordinator
 Dr. Pooranalingam Jeyarathan, Lecturer and Acting Leader for Research Center
 Mr. Amado Perez, Acting Head of Department, Design & Technology and Home Economics
 Mr. Simeon Yosam, Lecturer, Design & Technology
 Dr. Goru Hane-Nau, Head of Department, Social Science & Commerce, Editor-in-Chief
 Papua New Guinea Journal of Teacher Education
 Dr. Jerry Semos, Head of Department, Social Science & Commerce, Coordinator of Centre
 for Melanesian Studies
 Mr. Michael Kapari, Lecturer, Soil Science & Agricultural Education
 Ms. Veronica Thomas, Director, Student Administration
 河住靖則 (シニアボランティア・日本語教育)
 藤根克彦 (青年海外協力隊・システムエンジニア)
 野崎喜裕 (青年海外協力隊・システムエンジニア)

7. オーストラリア援助庁 (Australian Agency for International Development: AusAID)
 Mr. Frank Willemsen, First Secretary Development Cooperation, Australian High
 Commission
 Dr. Steve Pickford, Project Team Leader, Primary and Secondary Teacher Educaiton Project

8. その他
 Mr. Paraka M Pena, Associate Director, Professional & Continuing Education, The
 University of Papua New Guinea, University Open College
 MD. Abdul Mannan, Acting Director, University of Papua New Guinea Open College
 Mr. Bandara, Principal, Goroka Business College
 Mr. Ken Miere, Director, Papua New Guinea Education Institute
 Mr. Lester Mitigei, Principal, Goroka Secondary School
 Ms. Aprito Onopiso, Head Teacher, North Goroka Demonstration Primary School



The University of Goroka

To: The JICA Preparatory Study Team
Project for Improvement of Educational Equipment for UOG

SUBJECT: FINALISED EQUIPMENT LIST AFTER STUDY TEAM VISIT

I wish to take this time to firstly thank you for a very fruitful two weeks of intensive assessment of our educational equipment requirements at the University.

I consider the period of your stay as very successful in terms of your comprehensive assessment on our needs, and the finalized list following the preparatory study conducted.

I also wish to thank you for giving us the opportunity to add selected equipment that were previously not included in the Minutes of Discussions signed on 5th February 2003, due to circumstances at the time.

I am aware that, because of the later addition, they may be viewed with less priority. However these are also important for the University. They indicate the practical situation on the ground, and our need for them. The University will be grateful for any consideration given.

We sincerely hope, in the meantime, that the gesture of assistance offer made by the Government of Japan for the educational equipment needs of the University will move smoothly to the next stage.

Sincerely submitted

.....
Musawe Sinebare (PhD)
Acting Vice Chancellor

A. Equipment for Multipurpose Lecture Theater

No.	Items	Qty	Spec./Notes
1	Stage Lighting Equipment		
1.1	Boom for Spotlights	1 lot	* Mortor-drive lifting system is requested.
1.2	Plano-convex Spotlight	12 units	
1.3	Fresnel Spotlight	36 units	
1.4	Follow Spotlight	3 units	
1.5	Lamp for Spotlight	100 units	ISO standard, 1 KW
1.6	Remote control system for 8 spotlights	1 set	
1.7	Poly Color Filter	100 units	
1.8	Code, cable, stand, hanger, arm, etc. for boom	1 lot	
1.9	Power & Dimmer rack	1 set	
1.10	Cable Terminal Box	1 set	
1.11	Lighting Control Board	1 set	
1.12	Installation Material	1 lot	
2	Equipment for Presentation & Lecture		
2.1	Interactive White Board, Touch panel system	1 unit	Front type, 70 inch, RS23SC/USB
2.2	3D Object Presenter	1 unit	
2.3	Lap Top PC	1 unit	
2.4	Table for 3D Object Projector	1 unit	
2.5	Wireless Microphone System - 2 channel	1 set	with 3 lavalier & 2 hand microphones

B. Equipment for the New Library

No	Items	Qty	Spec / Notes
1	Stacks, Reading Table & Chair		
1.1	Ground Floor		
1.11	Book Stacks	44 units	500(L) x 50(W) x 180(H) cm, Double-sided, Wood
1.12	Reading Table	13 units	360 x 120 cm, Wood
1.13	Reading Chair	104 units	8 chairs per table
1.2	First Floor		
1.21	Book Stacks	44 units	500(L) x 50(W) x 180(H) cm, Double-sided, Wood
1.22	Reading Table	26 units	360 x 120 cm, Wood
1.23	Reading Chair	208 units	8 chairs per table
1.3	Mezzanine Floor		
1.31	Book Stacks	60 units	500(L) x 50(W) x 180(H) cm, Double-sided, Wood
1.32	Reading Table	1 unit	360 x 120 cm, Wood
1.33	Reading Chair	4 units	
2	Furniture for Staff offices and Rooms		
2.1	Ground Floor		
	Cataloging & Accession Room	1 lot	details are shown in ANNEX
	Office #1	1 lot	details are shown in ANNEX
	Office #2	1 lot	details are shown in ANNEX
	Community School Library Room	1 lot	details are shown in ANNEX
	AV Lounge	1 lot	details are shown in ANNEX
	Printery Room	1 lot	details are shown in ANNEX
2.2	First Floor		
	Librarian Office	1 lot	details are shown in ANNEX
	Librarian's Secretary Room	1 lot	details are shown in ANNEX
	Assistant Librarian Office	1 lot	details are shown in ANNEX
	Staff Meeting Room	1 lot	details are shown in ANNEX
	Office	1 lot	details are shown in ANNEX
	Seminar Room	1 lot	details are shown in ANNEX
	Maps Room	1 lot	details are shown in ANNEX
	AV Unit (Section)	1 lot	details are shown in ANNEX
2.3	Mezzanine Floor		
	Carrels (study booth)	1 lot	details are shown in ANNEX
3	Computers		
3.1	Computer - Ground Floor		
	Student Searching	10 units	Online Catalogue System
	Circulation Counter	2 units	Online Catalogue System
	Cataloging & Accession Room	3 units	Online Catalogue System
	Office	1 unit	Office use
	Community School Library Room	1 unit	Online Catalogue System, WWW search
	Printery Room	1 unit	Office use
3.2	Computer - First Floor		
	Student Searching	5 units	Online Catalogue System
	Librarian Office	1 unit	Online Catalogue System, Office use
	Librarian's Secretary Room	1 unit	Office use
	Assistant Librarian Office	1 unit	Office use
	Maps Room	1 unit	Information Searching
	AV Unit (Section)	1 unit	Office use
3.2	Computer - Mezzanine Floor		
	Carrels (study booth)	12 units	Online Catalogue System, Research study use
	Work Room	1 unit	Online Catalogue System, Office use
	<p>*Basic Specification of Computers: Windows PC with 15 inch monitor, Windows 2000, MS Office, UPS</p> <p>*Following computers may not equipped with MS Office software and UPS. Computers for Student Searching (15 units) Computer in Maps Room for Information Searching (1 unit)</p> <p>*Following computers may not equipped with MS Office software. Computers for Circulation Counter & Cataloging & Accession Room (5 units)</p>		

4	Equipment for Library Service - Ground Floor		
4.1	Laser Printer	2 units	
4.2	Scanner	1 unit	
4.3	Photocopy (heavy duty)	2 units	
5	AV Equipment for AV Lounge - Ground Floor (seating capacity : 20 persons)		
5.1	Multimedia Projector	1 unit	
5.2	Lap Top PC	1 unit	
5.3	VHS Video player	1 unit	
5.4	CD/DVD Player	1 unit	
5.5	Cabinet	1 unit	
5.6	Table for projector	1 unit	
5.7	Projector Screen, Ceiling mounted	1 unit	
6	Security System - Entrance		
6.1	Book Guard System	1 unit	

ANNEX Furniture for the Staff Offices and Rooms - New Library

No	Location	Item/Specification	Qty
	Ground floor		
1	School Library		
1.1		Shelving (wooden) 1.53m(h)x1m(w)x.3m(depth)	12
1.2		Reading table (wooden) 3.6m(l)x1.2m(w)x0.76m(h)	2
1.3		Reading Chairs (Armless)	20
1.4		Office Table (wooden) for Staff	1
1.5		Rotating Chair for Staff	1
1.5		Filing Cabinet (steel) with 4 drawers	1
2	AV Lounge		
2.1		Arm Chairs (wooden)	20
3	Office1 (Asst.Lib)		
3.1		Office Table (Wooden) 1.7m(L)x0.75m(w)x0.73m(h)	1
3.2		Rotating Chair with arms	1
3.3		Visitors Chairs (without arms)	2
3.4		Filing Cabinet (steel) with 4 drawers	1
		Bookshelf (2mx1m)	1
4	Printery		
4.1		Office Table (wooden) 3drawersx1 cabinet 1.7m(L)x0.75m(w)x0.73m(h)	1
4.2		Rotating Chair with arms	1
4.3		Steel cabinets (2 doors +4 shelves) 1.83m(h)x0.92m(w)x0.46m(depth)	3
4.4		Filing cabinets (steel) with 4 drawers	1
5	Cataloguing & Accession		
5.1		Shelves (wooden) 1.82m(h)x0.92m(w)x0.33m(depth)	4
5.2		Steel cabinet	1
5.3		Adjustable Chairs	4
5.4		Book Trolleys (wooden)	2

No	Location	Item/Specification	Qty
6	Office 2 (Reader Service Lib)		
6.1		Office Table (wooden) with 3 drawers & Cabinet 1.7m(L)x0.75m(w)x0.73m(h)	1
6.2		Chairs (Rotating)	1
6.3		Visitors Chairs without arms	2
6.4		Filing Cabinet	1
6.5		Bookself (wooden) 2mx1m	1
	First Floor		
	AV/IT Section		
7	Director IT		
7.1		Office Table (wooden) with 3drawers&Cabinet	1
7.2		Chair rotating with arms	1
7.3		Visitors Chairs with arms (wooden)	2
	JICA Volunteer		
7.4		Office Table (wooden) with 3drawers&Cabinet	1
7.5		Chair rotating with arms	1
7.6		Visitors chairs with arms (wooden)	2
	Understudy to JICA		
7.7		Office table (wooden) with 3drawers&Cabinet	1
7.8		Chair with arms (wooden)	1
	AV/IT Secretary		
7.9		Office Table (wooden) with 3drawers&Cabinet	1
7.10		Chair rotating with arms	1
7.11		Filing Cabinets (steel)	1
7.12		Visitors chair with arms (wooden)	1
7.13		Storage cabinet (steel)	1
	AV Technicians		
7.14		Woork Bench with drawers (wooden) 3m(L)x0.8m(w)x0.9m(h)	1
7.15		Stools (wooden)	4

No	Location	Item/Specification	Qty
	C/Technical Officer		
7.16		Office Table (wooden) with 3drawers&Cabinet	1
7.17		Chair rotating with arms	1
7.18		Visitors chairs with arms (wooden)	2
7.19		Filing Cabinet (steel)	1
8	Maps Room		
8.1		Map Cabinets with 6 drawers (steel) 1.16m(l)x0.71m(h)x.83m(w)	2
8.2		Office table (wooden) 1.36m(L)x0.84m(w)x0.73m(h)	1
8.3		Chair armless (wooden)	1
9	Office		
9.1		Office table (wooden) 3 drawers 1.7m(L)x0.75m(w)x0.73m(h)	1
9.2		Chair Rotating with arms	1
9.3		Visitors cahirs with arms	2
9.4		Filing Cabinet (steel) with 4 drawers	1
9.5		Bookself (wooden) 2m(h)x1.0m(w)x0.33m(depth)	1
10	Seminar room		
10.1		Tables, Collapsible 1.52m(L)x0.6m(w)x0.72m(h)	7
10.2		Chairs armleass (wooden)	21
10.3		White board- Movable with casters	1
10.4		Storage cabinet steel	1
10.5		TV deck and screen	1
11	Staff meeting room		
11.1		Tables, collapsible 1.52m(L)x0.6m(w)x0.72m(H)	11
11.2		Chairs (Confrence type) wooden with arms	21
11.3		White board movable with casters	1
11.4		Chairs (wooden) with arms	6

No	Location	Item/Specification	Qty
12	Librarian's Secretary		
12.1		Office table (wooden) with 3drawers&cabinet	1
12.2		Chair -Rotating with arms	1
12.3		Visitors chair (wooden) without arms	1
12.4		Filing Cabinets (steel) 4 drawers	6
13	Librarian		
13.1		Office table (wooden) with 3drawers&Cabinet	1
13.2		Chair -Rotating with arms	1
13.3		Filing cabinet (steel) 4 drawers	1
13.4		Visitors chairs (wooden) with arms	2
13.5		Book self (2m(h)x1.2m(w)x0.3m(depth)	1
14	Assistant Librarian		
14.1		Arm Chairs (wooden)	8
14.2		Coffee tables (wooden)	2
14.3		Refrigerator (small)	1
14.4		Cabinet (wooden) with glass door , 2 shelves 2m(h)x1m(w)x0.5m(depth)	1
	Mezzanine		
15	carrels		
15.1		Carrels (wooden) <i>Refer details of carrels on p/copy already supplied</i>	12
15.2		Rotating chairs	12
15.2		Office table (wooden)for staff.	1
15.3		Rotating chair for staff	1
15.4		Filing cabinet	1

C. Equipment for AV Section (Common Use / in the New Library)

No.	Items	Qty	Spec./Notes
1 Video Shooting for Students Practice(*1) & Academic Staff Use(*2)			
1.1	DV-mini Camcorder with accessories	5 units	Home use level
1.11	Spare charger	2 units	
1.12	Spare battery	5 units	
1.2	Rain cover for Camcorder	5 units	
1.3	Tripod	5 units	
1.4	Carrying Case	5 units	
(*1) ETE 001 Educational Technology (*2) Peer Teaching, etc. On-demand after training			
2 Non-linear Video Editing & DTP System for Students Practice(*3) & Academic Staff Use(*4)			
2.1	Windows Personal Computer with 17 inch monitor	5 sets	with Video board, Audio-in, Speaker system, CD-RW
2.2	Software:		
2.21	Windows 2000 / XP	5	
2.22	Video Editing Software (Beginner level)	5	
2.23	Video Editing Software (Intermediate level)	5	
2.24	Graphic & Photo Work Software	5	
2.25	DTP Software	5	
2.26	Microsoft Office	5	
2.27	Power Point	5	
2.3	DV-mini Recorder/player	1 unit	
2.4	TV monitor for DV-mini Recorder/player	1 unit	
2.5	Scanner	1 unit	A4
2.6	Laser Printer	1 unit	A4
2.7	Headphone	5 units	
2.8	UPS	5 units	
2.9	Table & Chair for Computers	5 sets	
2.10	Table/rack	1 lot	
2.11	Steel Cabinet	1 lot	
(*3) ETE 001 Educational Technology (*4) Teaching Material Production, etc. On-demand after training			
3 Video Shooting for AV Section			
3.1	DVCAM/DV-mini Camcorder with accessories	2 units	3CCD, Production level
3.11	Spare charger	1 unit	
3.12	Spare battery	4 units	
3.3	Rain cover for Camcorder	2 units	
3.4	Tripod	2 units	
3.5	Carrying Case	2 units	
4 Non-linear Video Editing & DTP System for AV Section			
4.1	Windows Personal Computer	1 set	with Video board, Audio-in, Speaker system
4.2	Software:		
4.21	Windows 2000 / XP	1	
4.22	Video Editing Software (Intermediate-production level)	1	
4.23	Graphic & Photo Work Software	1	
4.24	DTP Software	1	
4.25	Microsoft Office	1	
4.26	Power Point	1	
4.3	Video Monitor 21-inch	2 units	for editing work
4.4	DVCAM/DV-mini Recorder/player	1 unit	
4.5	Analog - Digital converter	1 unit	
4.6	VHS Recorder/player	1 unit	
4.7	CD/DVD Burner	1 unit	Copying of edited video programs from computer into CD/DVD
4.8	CD/DVD player	1 unit	
4.9	Portable Mini Disc Recorder/player	2 units	For voice over on video editing
4.10	Portable Cassette Tape Recorder/player	1 unit	
4.11	Scanner	1 unit	A4
4.12	Laser Printer	1 unit	A4
4.13	Headphone	1 unit	
4.14	UPS	1 unit	
4.15	Photocopier	1 unit	Table top, with stand
4.16	Table & Chair for Computer	1 set	
4.17	Table/rack	1 lot	
4.18	Steel Cabinet	1 lot	

No.	Items	Qty	Spec./Notes
5	Tool & Instruments for Maintenance Work		
5.1	Cathode Ray Oscilloscope	1 unit	50MHZ
5.2	Digital Multimeter	3 units	
5.3	Digital LCR meter	1 unit	measure induction, capacitance and resistance
5.4	Color Picture Tube Rejuvenator	1 unit	
5.5	High Wattage Soldering Station	2 units	variable temp. control with replacement tips
5.6	240-240V Isolation Transformer	1 unit	2 amps rating
5.7	High Voltage Probe	1 unit	measure high voltage on computer monitor or TV screen
5.8	Color TV Pattern Generator	1 unit	test high tension leads on fly back transformers
5.9	L.O.P.T. Tester	1 unit	
5.10	Degaussing Wand	2 units	
5.11	Video Service Tool Kit	2 units	
5.12	Video Head Extractor Tool	1 unit	
5.13	Video Head Tester	1 unit	
5.14	Video Alignment Tools	1 unit	
5.15	Monitor Function Generator	1 unit	
5.16	Data Books 1) Diode Manual 2) Transistor Manual 3) Transistor Substitution 4) The C-MOS IC Manual 5) The Linear IC Manual 6) Towers Transistor Selector 7) Semi-conductor World Data Book (vol. 1&2) 8) Other necessary Data Books for PC repair or IC manuals	1 set	
5.17	Cabinet for Tool & Instruments	1 lot	
5.18	Work Bench	1 lot	
6	AV Equipment for Common Use (*5)		
6.1	Lap Top PC	4 units	
6.2	Multimedia Projector	4 units	
6.3	3D Object Presenter	2 units	
6.4	Digital Camera	2 units	
6.6	DV-minii Player	2 units	
6.5	CD/DVD Player	2 units	
6.7	21 inch TV Monitor	1-2 units	
6.8	Extension power reel	5 units	
6.9	Carrying Case	5 units	several sizes
(*5) Q'ty of those items are subject to change depending on the q'ty of same items in other common lecture rooms and department			
7	Recording & Distribution of Educational TV Programs		
7.1	Satellite TV Dish	2 sets	with LNB
7.2	Decoder	3 units	CNN, National Geography, Discovery
7.3	S-VHS Video Recorder/Player	3 units	CNN, National Geography, Discovery

D. Equipment for Printery Section (in the New Library)

No.	Items	Qty	Spec. / Notes
1	Offset press, A3 2-color/single-color	1 unit	w/drying unit
2	Dark room camera (Graphic camera)	1 unit	
3	Plate Maker (Exposure system)	1 unit	
4	Electric Guillotine	1 unit	cutting 520mm(L) x 80mm(H)
5	Electric Stapler	1 unit	22mm
6	Thermal Book Binder	1 unit	A3, Hot-melt glue, Desk top
7	Paper Holder	1 unit	A3
8	Paper Sorter	1 unit	
9	Digital Stencil Duplicator	1 unit	A3
10	Photocopy, Heavy duty	1 unit	
11	Work Bench	1 lot	
12	Shelves	1 lot	

E. Equipment for Language Laboratory, Dept. of Language & Linguistic

No.	Items	Qty	Spec. / Notes
1	Students' Self-learning system for tutorial class	30 units	For improving the English listening & speaking capability by self-study, Voice recording & listening function, Interactive study media is desired.
2	TV monitor 29 inch	1 unit	
3	VHS Video Recorder/Player	1 unit	
4	DVD/CD Player	1 unit	
5	Steel Cabinet for TV, VTR	1 unit	
6	OHP	3 units	
7	Projector Screen, Movable	3 units	
8	Cassette Tape Player, Portable	3 units	
9	DV Camera with stand for peer teaching	(1) unit	Use DVcam at the AV Section

Note : Not only for the Language Laboratory, but includes the equipment to be used in other classrooms.

F. Equipment for Educational Technology Section, Dept. of Curriculum & Teaching

No.	Items	Qty	Spec. / Notes
1	TV 21/25 inch	2 units	ETE 001 Educational Technology
2	Over Head Projector	3 units	ETE 001 Educational Technology
3	Electronic Stencil Cutter	3 units	ETE 001 Educational Technology
4	Electronic Stencil Duplicating Machine	2 units	ETE 001 Educational Technology
5	Video Player	4 units	ETE 001 Educational Technology
6	Slide Projector with magazine	5 units	ETE 001 Educational Technology
7	Stereo Amplifier	1 unit	ETE 001 Educational Technology
8	Double Deck Cassette Player	1 unit	ETE 001 Educational Technology
9	CD Player	1 unit	ETE 001 Educational Technology
10	Heavy Duty Photocopier	1 unit	ETE 001 & Preparation of materials for teaching practice

G. Equipment for Computer Laboratories

No	Items	Q'ty	Spec. / Notes
1	New Open Computer Laboratory	* Room for New PC Lab. shall be determined.	
1.1	Windows Personal Computer with 15 inch monitor	60 sets	1.5GHz, 20-40GB HD, 128MB or more, FD, CD-ROM, Network card (100Mbps)
1.2	Software:		
1.21	Windows 2000 professional	60	
1.22	Microsoft Office	60	
1.23	Anti Virus Software	60	
1.24	SPSS (Statistics)	10	
1.25	Windows 2000 Server	1	
1.3	Equipment/materials for Network system:		
1.31	Network Cable	700 m	CAT5
1.32	RJ 45 plug	130 pcs.	
1.33	Network point (wall mount)	60 pcs.	box-face plate-RJ45 keystone jack
1.34	Switch (HUB) - 24 port	2 units	
1.35	Switch (HUB) - 16 port	2 units	
1.36	UPS	2 units	for Switch (HUB)
1.4	Laser Printer	2 units	
1.5	Scanner	1 unit	
1.6	UPS	60 units	for PCs
1.7	AVS	1 unit	to cover all 60PCs
1.8	Air Conditioner, Separate type	1-2 units	
2	Teaching Computer Laboratory, Dept. of Maths & Computing	(Present number of PC : 35 units)	
2.1	LCD Projector	1 unit	SMAC 001 Information Technology Skills
2.2	Projector Screen, Movable	1 unit	75 inch
2.3	AVS	1 unit	to cover 35PCs
3	Female Open Computer Laboratory	(Present number of PC : 22 units)	
3.1	AVS	1 unit	to cover 22PCs
3.2	Air Conditioner, Separate type	1 unit	
4	Male Open Computer Laboratory	(Present number of PC : 18 units)	
4.1	AVS	1 unit	to cover 18PCs
4.2	Air Conditioner, Separate type	1 unit	
5	IT ROOM		
5.1	UTP Cable(Cat 5) Tester	1 unit	with TDR function
5.2	Fiber optic Cable Tester	1 unit	
5.3	UPS for Data servers	3 units	3 KVA or more

H. Equipment for Expressive Arts Education (Music section, Dept. of Exp. Arts & Rel. Education)

No.	Items	Qty	Spec / Notes
1	Music Instruments		
1.1	Trombone	1	Instrument studies, small group teaching & practices Instruments are all intermediate level
1.2	Trumpet	3	
1.3	Comet	2	
1.4	Alto sax	4	
1.5	Tenor sax	4	
1.6	Clarinet	3	
1.7	Flute	4	
1.8	Violin	2	
1.9	Electric Guitar	1	
1.10	Bass Guitar	1	
1.11	Lead Guitar Amp	1	
1.12	Bass Guitar Amp	1	
1.13	Drum Kit	1 set	
1.14	Music Stand	20	
1.15	Digital Piano with stand for classroom (student use)	12	Qty is based on the student number & room space.
1.16	Piano Seat-Padded regular	13	
1.17	Digital Piano with stand- Portable type for classroom (teacher use) & live application	1	
1.18	Electronic Synthesizer for live application (a)	1	piano and organ sounds
1.19	Electronic Synthesizer for live application (b)	1	orchestral and environment sounds
1.20	Power Amp	1	
1.21	16 Channel Mixer	1	
2	Music Composition		
2.1	Digital Sound Recorder (DAT)	1	
2.2	Monitor Speakers - studio application	1 set	
2.3	Computer for Music composition	4	eMAC/G4
2.4	Electric Keyboard for Music composition	4	
2.5	Music Scoring Software	4	
2.6	Music Recording Software	4	For equalization of recording material
2.7	Laser Printer	1	A4
2.8	CD Burner	1	
2.9	Compact Stereo System (CD, DVD, Tape)	1 set	
2.10	UPS	4	
2.11	AVS	1	
3	Peer Teaching		
3.1	TV Monitor 25/29 inch	1	
3.2	VHS Video player/recorder	1	
3.3	Steel Cabinet for TV, Video & Stereo system	1	
3.4	DV Camera with stand	(1)	Use DVcam at the AV Section

I. Equipment for Agriculture Education (Agriculture Section, Dept. of Science, Agriculture & Health)

No.	Items	Qty	Spec. / Notes
1 GENERAL LABORATORY EQUIPMENT			
1.1	Analytical lab balances	2	Reagent preparation for various soil and plant nutrient tests for student practical
1.2	Distilled water/ Deionised Water Machine	1	
1.3	Lab Drying Oven	1	General drying purposes for laboratory activities
1.4	Ammonia distillation apparatus	1 set	
1.5	Lab incubator	1 unit	Incubate samples for general laboratory work
1.6	Digital lab pH meter	2	For taking pH readings of various kind of samples – such as pH of different liquids
1.7	Desiccators	5	For sample cooling
1.8	Compact centrifuge at 2000/3000 rpm	1	Soil and plant sample extraction for analysing chemical
1.81	Screw cap polypropylene centrifuge tubes – 50 ml	2 dozen each	Sample collection for centrifuge
1.82	Polypropylene centrifuge tubes without caps – 50 ml	2 dozen each	Sample collection for centrifuge
1.9	Spectronic Digital Spectrometer	2	Measuring soil and plant chemical elements
1.10	Vacuum Pressure Pump	1	General laboratory work in analytical preparation
1.11	Mortar & Pestle	5	Soil and plant sample preparation
1.12	Aluminum Heating Blocks – 7 rows of 6 blocks	1 set	For sample heating
1.13	Atomic Absorption Spectrometry	1	Measuring soil and plant nutrients,
1.14	Autoanalyzer	1	Measuring soil and plant nutrients
1.15	Conductivity Meter	4	Measuring ion conductivity in sample
1.16	Flame Spectrometry	1	For measuring potassium & related elements
1.17	Heating Mantles	1	Sample heating for analysis
1.18	Kjeldahl apparatus	1	For nitrogen analysis using Kjeldahl method
1.19	Liquid Dispensers	5	Measuring various laboratory solution (acid/alkaline) for sample preparation and analysis
1.20	Calorimeters	5	For measurement of nutrient elements
1.21	Peristaltic Pump	1	For general laboratory work such as nutrient solution
1.22	Lab Water baths	1	For general laboratory preparation of samples
1.23	Electronic Microscope	20	Analysing specimens
1.24	Dissecting/Stereo Microscope	20	Dissecting plants, flowers, insects, etc
1.25	Hand lenses	20	For quick viewing of plant parts, micro-organisms .etc
1.26	Electric Cork Borer	1	Corking holes
1.27	Laboratory Blenders with Timer	1	Sample preparation
1.28	Laboratory sample storage fridge	1	Sample storage
1.29	Laboratory deep fridge for sample storage	1	Sample storage
2 Equipment for Soil Science and Plant Measurement			
2.1	Soil Bulk Density Corers – stainless	20	Measuring soil bulk density
2.2	Soil Shaker for soil samples – end over end shaker	2	Soil sample preparation for nutrient analysis
2.3	Reciprocating shakers	2	Soil and plant sample preparation for nutrient analysis
2.4	Refractometers for measuring plant products juices concentration	5	For measuring plant products juice concentration
2.5	Tullgren Funnels – 6 and 12 Banks – soil animals extraction	1 unit	For the extraction of soil animals from plant litter and soil
2.6	Saltr & Hollick Soil Washing Apparatus – for extracting soil arthropods	1 unit	For extracting active and inactive arthropods from the soil and plant litter
2.7	Lab Bench Shakers	2	For sample preparation for nutrient test
2.8	Micro pH	2	Measuring pH in micro environment
2.9	Ion Analyzer	1	Analysing ions present in plant and soil samples
2.10	Standard Soil Test Sieves for soil particle analysers – different sizes	1 set	For soil particle analysis
2.11	Standard Test Sieve Shaker	1 set	For shaking soil particle into different sizes using sieve sizes
2.12	Water quality Analyser	2	Measuring water samples for nutrient pollution in streams or
2.13	Hygrothermographs for recording temperature & relative humidity	2	Measuring temperature & relative humidity
2.14	Thermographs for measuring and recording air temperature & soil temp	2	Measuring and recording air and soil temperature
2.15	Soil Density Hydrometers	5	Measuring soils density
2.16	Soil Thermometers	10	Measuring soil temperatures
2.17	Fruit gauge for measuring fruit size	5	Measuring fruit sizes of various fruit crops

No.	Items	Qty	Spec / Notes
2.18	Electronic Dendometers for measuring fruit & stem growth	5	Measuring fruit and stem growth of most crops
2.19	Chlorophyll Meter for measuring chlorophyll present in leaves	5	Measuring amount of chlorophyll
2.20	Permeameter, Guelph for measuring soil hydraulic conductivity	5	Measuring soil hydraulic conductivity, soil sorptivity, soil matrix flux potential
2.21	Permeameter, Shelby Tube for measuring soil permeability tests	5	Measuring soil permeability on undisturbed soils
2.22	Permeameter, Combination for measuring soil hydraulic conductivity	5	Measuring soil permeability in controlled environment
2.23	Permeameter Compaction for soil compaction	5	Measuring flow of water in the soil
2.24	Infiltrometers for measuring soil infiltration rate	5	Measuring soil infiltration rate
2.25	Soil Tensiometer, Jet Fill for measuring soil moisture potential	5	Soil moisture potential
2.26	Capacitance Probe for measuring Volumetric Soil Water Content	5	Measuring volumetric water content in the field of crops
2.27	Time Domain Relectometry System for measuring Volumetric Water Content	5	Measuring volumetric water content in soils
2.28	Penetrometer Static Cone for measuring soil consistency & soil Compaction	5	Measuring soil consistency & soil compaction
2.29	Pressure Extactors for measuring The Water Holding Capacity (WHC) of soils	5	Measuring water holding capacity of soils
2.30	Potentiometer for measuring soil temperature and water potential	5	Measuring soil temperature and water potential
2.31	Munsell Soil Color Charts	30	Soil colour description in soil profile
2.32	Wind speed anemometers	5	Measuring wind speed
2.33	Soil Core Samplers of different soil depths	5 each	Collecting soil samples at various depth for nutrient analysis
2.34	Soil Sampling augers of different soil depths	5 each	Collecting soil samples for soil nutrient analysis
2.35	Environmental Monitoring Equipment	2 unit	Mainly for environment purposes particularly for nutrient
3	LABORATORY GLASSWARE		ANNEX 1
4	LABORATORY CONSUMABLES		ANNEX 2
5	EQUIPMENT FOR LECTURE & PRACTICAL PRESENTATION		
5.1	TV Monitor 25 inch	1	
5.2	VHS Video Player	1	
5.3	Steel Cabinet for the above	1	
5.4	Slide Projector	1	For slide presentation during lectures or practicals
5.5	Over Head Projector	3	For lecture & practical presentation
5.6	Projector Screen, Movable	1	75/100 inch
5.7	Digital Camera	1	Taking pictures and writing course materials
5.8	DV Camera wih stand for peer teaching	(1)	Use DVcam at the AV Section
6	MODEL FARM EQUIPMENT & FACILITIES		
6.1	Tractor with PTO & Attachments	1	Land preparation for student practical on vegetable or crop
6.11	Trailer	1	
6.12	Disc plough	1	Land preparation for student practical on vegetable or crop
6.13	Disc harrow	1	Land preparation for student practical on vegetable or crop
6.14	Mould board plough	1	Land preparation for student practical on vegetable or crop
6.15	Rotary disk mower	1	Farm slashing
6.2	Generator 5kva - diesel	1	Farm electrical work
6.3	Portable lawn mower	1	For farm lawn cutting
6.4	Water pump - diesel	1	Pump water to head tank for watering, irrigation & drinking
6.5	Irrigation hose - standard size attached to pump	2	For irrigation of crops
6.6	Irrigation Sprinklers	20	For watering of crops
6.7	Poultry house to house broilers, layers, & breeders	1	
6.8	Pig unit to house breeders, weaners, piglets	1	
6.9	Nursery house (Nethouse)	1	
6.10	Storage refrigerator - standard	1	Sample storage
6.11	Storage freezer - standard	1	Sample storage
6.12	Tools kit for maintenance of farm machinery	1	
6.13	Coffee pulpar	5	Pulping coffee cherry
6.14	Rice milling machine	2	
6.15	Hanging Scales - 50kg capacity	4	Weighing crop yield, animal feed etc
6.16	Weighing scale for animals	5	Life weight measurement for pigs, goat & sheep

No.	Items	Qty	Spec. / Notes
6.17	Hammer mill	1	Crushing animal feed
6.18	Animal Feed mill / grinder	1	Grinding animal feed
6.19	Feed pelleter	1	Making feed pellet
6.20	Feeding bins	10	Storage bins for feeds
6.21	Feeding bucket	10	Carrying feed to animals
6.22	Ear tag applicator	2	Tagging tags on ears of animals
6.23	Metal cages	5	Metabolism measurement of animals used for animal courses
6.24	Emasculator	2	Used for castration
6.25	Tape measure - 5 m, 30m, 100m	2 each	Farm measurement

ANNEX 1 (Agriculture Section)

No.	Items	Qty	Spec. / Notes
3	LABORATORY GLASSWARE		
3.1	Glass Burets – 50 ml standard	20	
3.2	Volumetric flasks – 5ml, 10 ml, 25 ml, 50 ml, 100 ml, 200ml, 250 ml, 500 ml, 1000ml	20 each	
3.3	Measuring Pipet – 1ml, 2ml, 5ml, 10ml, 25ml	20 each	
3.4	Pyrex Erlenmeyer Flasks – 25ml, 50ml, 125ml, 250ml, 500ml, 1000ml	20 each	
3.5	Measuring Cylinders – 10ml, 25ml, 50ml, 100ml, 250ml, 500ml, 1000ml	20 each	
3.6	Pyrex Beakers-10ml,20ml,30ml,50ml,100ml,150ml,250ml,600ml, 1litre, 2litre	20 each	
3.7	Test tubes – 16x 125mm, 18 x 150mm	20 each	
3.8	Pipet brushes	10	
3.9	Test brushes	10	
3.10	Funnels – 50mm, 65mm, 75mm, 100mm in top diameter	5 each	
3.11	Pipet fillers	5	
3.12	Lab micro spoon	10	
3.13	Micro Spatulas	10	
3.14	Glass Stirring Rods	10	
3.15	Draining Rack or Stand	5	
3.16	Rubber stoppers of different sizes to fit general glassware	1 dozen each	