DEPARTMENT OF HIGHER EDUCATION

GOVERNMENT OF KERALA

Scholar Support Programme
(Reading material for Principals of Colleges)

June, 2012

The Scholar Support Programme, part of the 'New Initiatives in Higher Education' initiated by the Department of Higher Education, Govt. of Kerala aims at imparting additional support to students in curricular areas of weakness. The pilot phase of the programme that has been initiated in the current academic year would target the First semester Degree programme (B.A./B.Sc/B.Com) being offered by the four Universities of the State viz., Kerala, MG, Calicut and Kannur Universities. Subjects in which additional curricular support would be offered have been selected based on a results analysis work carried out based on results from the affiliated Colleges of Kerala (Govt. and aided).

Results analysis work – for the determination of weak subjects

The results analysis work involved statistical analysis of the end semester University Examination results of the regular and non-self financing courses of affiliated colleges (Government and aided colleges) of the Kerala, M.G., Calicut and Kannur Universities. Dr. K.M. Abraham IAS, Principal Secretary (Higher Education and Social Welfare) to the Govt. of Kerala appointed a two member team comprising Dr. K.P. Jaikiran as Nodal Co ordinator (Assistant Professor in Geology) and Dr. T. A. Anand (Assistant Professor in Hindi) to work under the supervision and guidance of Dr. P.K. Velayudhan, Additional Director of Collegiate Education, Kerala. The team visited the four Universities and interacted with the office of the Controller Examinations and collected data pertaining to the newly introduced Choice Based Credit and Semester System (CBCSS) from the respective Computer Centres. Due to the Kerala University's late joining of the CBCSS in 2010 and the available digital data there, results of the first and second semesters of the B.A/B.Sc/B.Com/BBA programmes were considered for the analysis.

Major programmes were selected from the first and second semester B.A/B.Sc/B.Com/BBA of the Kerala, Calicut, Kannur and MG Universities. The results data from the University of Kerala pertains to 2010 and 2011 examinations, that from the others relate to the 2009 and 2010 Examinations. The list of programmes selected for the analysis is given below:

B.A.
   English, Malayalam, Hindi, Sanskrit, Economics, Political Science and History

B.Sc
   Mathematics, Physics, Chemistry, Computer Science, Botany and Zoology

B.Com and BBA

Methodology

The procedure adopted for the analysis involved calculation of percentage grades and weighted scores for each subject of a programme (College wise) and determination of composite indices for each programme based on subject wise weighted scores. The methodology developed by **Iyengar and Sudarshan (1982)** for the calculation of Composite Index from multivariate data was used. The value of weighted score varies between 5 (where all students get E grade) and 35 (Where all students get A grade). The value of Composite Index varies between 0 and 1 and is useful for ranking colleges based on performance in a programme. While the indices help to determine paper wise student performance in different colleges, the composite index is a good tool for benchmarking the colleges.

a. Calculation of percentage grades

From the number of grades (A-E) obtained for different papers in a programme, the percentage grades were calculated first.

Grade data for a programme

B.Sc Chemistry

GOVT.COLLEGE ,CHITTUR

No. of students registered	21
No. of students appeared	21

Paper/Grade	A	B	C	D	E	
Communicative Skills in English	1	10	9	1	0	**21**
Critical Reasoning,Writing and Presentation	1	11	7	2	0	**21**
Sargathmaka Rachanayum Ashaya vinimaya Sheshiyum	2	7	1	0	0	**10**
Communication Skills in Hindi	4	5	0	0	0	**9**
History of Tamil Literature	0	2	0	0	0	**2**
Foundations in Chemistry	1	15	5	0	0	**21**
Mathematics	0	9	11	1	0	**21**
Properties of Matter And Thermodynamics	0	12	9	0	0	**21**

Percentage Grade calculation

Paper/Grade	A%	B%	C%	D%	E%	
Communicative Skills in English	4.76	47.62	42.86	4.76	0.00	100.00
Critical Reasoning,Writing and Presentation	4.76	52.38	33.33	9.52	0.00	100.00
Sargathmaka Rachanayum Ashaya vinimaya Sheshiyum	20.00	70.00	10.00	0.00	0.00	100.00
Communication Skills in Hindi	44.44	55.56	0.00	0.00	0.00	100.00
History of Tamil Literature	0.00	100.00	0.00	0.00	0.00	100.00
Foundations in Chemistry	4.76	71.43	23.81	0.00	0.00	100.00
Mathematics	0.00	42.86	52.38	4.76	0.00	100.00
Properties of Matter And Thermodynamics	0.00	57.14	42.86	0.00	0.00	100.00

In the case of papers that offer choices, average grade was calculated from the component grades.

b. Determination of weighted grades from percentage grades

Using these percentage grades, weighted average scores were estimated for each paper by assigning weights based on the grading system followed by the Universities.   The grade points followed by the Universities are given below:

Letter grade	Grade points	Grade range
A	4	3.5-4.0
B	3	2.5 -3.49
C	2	1.5 – 2.49
D	1	0.5 – 1.49
E	0	0.00 – 0.49

Based on the above grade range, weights were assigned to the grades A-E. Thus, A was assigned a weight of 35, B : 30, C : 20, D : 10 and E 5 respectively. This enables the weighted grades to add upto 100.

Weighted average score calculation

Paper	35	30	20	10	5	100
Communicative Skills in English	1.7	14.3	8.6	0.5	0.0	25.0
Critical Reasoning,Writing and Presentation	1.7	15.7	6.7	1.0	0.0	25.0
Sargathmaka Rachanayum Ashaya vinimaya Sheshiyum	7.0	21.0	2.0	0.0	0.0	30.0
Communication Skills in Hindi	15.6	16.7	0.0	0.0	0.0	32.2
History of Tamil Literature	0.0	30.0	0.0	0.0	0.0	30.0
Foundations in Chemistry	1.7	21.4	4.8	0.0	0.0	27.9
Mathematics	0.0	12.9	10.5	0.5	0.0	23.8
Properties of Matter And Thermodynamics	0.0	17.1	8.6	0.0	0.0	25.7

Based on the weights assigned the value of the weighted average scores varies between 5 and 35 as the minimum and maximum weights are 5 and 35 respectively. If all students get A grade for a paper, the Weighted average score will be 35 and if all students get E grade, the score would be 5.

c.   *Calculation of Composite Index*

From the weighted average scores estimated for each paper for all the colleges of a University for a semester, an index is calculated using the formula:

$$\textbf{Index Value} \ (X_{id}) \ = \ \frac{X_{id} \ - \text{Min} (X_{id})}{\text{Max} (X_{id}) - \text{Min} (X_{id})}$$

Where X_{id} represent the value of the i-th paper in the d-th College of a University

state (i=1,2,3..........m: d=1,2,3…………, n).

The composite index is the simple average of all the indices.

The index varies between 0 and 1.

Table showing Composite Indices for B.Sc Chemistry (I Semester – University of Calicut)

	Communicative Skills in English	Critical Reasoning,Writing and Presentation	Second languages	Foundations in Chemistry	Mathematics	Properties of Matter And Thermodynamics	Comp. Index
CHRIST COLLEGE, IRINJALAKUDA	0.51	0.70	0.43	0.51	0.49	0.34	0.49
GOVT.COLLEGE ,CHITTUR	0.46	0.50	0.49	0.61	0.44	0.45	0.49
CARMEL COLLEGE,MALA	0.64	0.51	0.44	0.51	0.32	0.40	0.47
ST.JOSEPH COLLEGE,DEVAGIRI	0.60	0.75	0.53	0.59	0.67	0.48	0.60
ST. ALLOYSIUS COLLEGE, ELTHURUTH	0.64	0.65	0.39	0.36	0.37	0.22	0.44
FAROOQ COLLEGE,FEROKE	0.69	0.71	0.42	0.69	0.85	0.24	0.60
GOVT.ARTS AND SCIENCE COLLEGE,CALICUT	0.67	0.62	0.47	0.55	0.67	0.11	0.51
MES KALLADI COLLEGE,MANNARKKAD	0.67	0.37	0.00	0.49	0.45	0.11	0.35
LITTLE FLOWER COLLEGE,GURUVAYUR	0.98	1.00	0.57	1.00	1.00	1.00	0.92
MALABAR CHRISTIAN COLLEGE,CALICUT	0.40	0.41	0.37	0.00	0.13	0.15	0.24
GOVT.COLLEGE,MADAPPALLY	0.34	0.63	0.41	0.73	0.62	0.62	0.56
GOVT.COLLEGE,MALAPPURAM	0.34	0.39	0.55	0.42	0.50	0.59	0.47
NSS COLLEGE ,MANJERI	0.48	0.66	1.00	0.39	0.48	0.40	0.57
MES COLLEGE,MAMPAD	0.41	0.20	0.42	0.29	0.26	0.03	0.27
MERCY COLLEGE ,PALAKKAD	0.49	0.81	0.55	0.77	0.67	0.48	0.63
NSS COLLEGE ,OTTAPPALAM	1.00	0.96	0.60	0.65	0.84	0.95	0.84
PSMO COLLEGE,THIRURANGADI	0.65	0.71	0.42	0.51	0.61	0.40	0.55
MES COLLEGE,PONNANI	0.60	0.52	0.51	0.35	0.00	0.00	0.33
SNGS COLLEGE,PATTAMBI	0.80	0.55	0.01	0.56	0.73	0.20	0.47
PROVIDENCE WOMENS COLLEGE,CALICUT	0.74	0.52	0.52	0.36	0.75	0.28	0.53
SREEKRISHNA COLLEGE,GURUVAYOOR	0.00	0.00	0.20	0.28	0.01	0.07	0.09
SACRED HEART COLLEGE,CHALAKKUDY	0.80	0.74	0.36	0.63	0.85	0.40	0.63
ST. JOSEPHS COLLEGE IRINJALAKUDA	0.54	0.84	0.49	0.78	0.72	0.44	0.63
SREEKERALAVARMA COLLEGE,THRISSUR	0.59	0.51	0.43	0.36	0.59	0.34	0.47
ST.MARYS COLLEGE,SULTHAN BATHERY	0.65	0.68	0.41	0.45	0.43	0.66	0.55
SN COLLEGE , NATTIKA	0.35	0.39	0.33	0.25	0.48	0.25	0.34
SVNSS COLLEGE,WADAKKANCHERY	0.58	0.88	0.48	0.80	0.55	0.03	0.55
ST. THOMAS COLLEGE, TRISSUR	0.56	0.60	0.36	0.65	0.26	0.41	0.48
UNITY WOMENS COLLEGE,MANJERI	0.39	0.45	0.51	0.42	0.53	0.25	0.42
SV COLLEGE, KUNNAMKULAM	0.84	0.90	0.55	1.00	0.94	0.77	0.83
GOVT.VICTORIA COLLEGE,PALAKKAD	0.74	0.84	0.51	0.40	0.91	0.02	0.57
ZAMORINS GURUVAYURAPPAN COLLEGE,CALICUT	0.58	0.41	0.24	0.08	0.22	0.11	0.27

Average weighted scores of subjects are used in this work to assess the performance of students at the college level. These were consolidated for the different programmes based on semester and University. Threshold values of 22.5 and 20 were set for demarcating average and below average performances. A subject showing below average performance is considered as weak. For the Calicut University threshold values were set at 25 and 22.5 for indicating average and below average performances as the average grade awarded for all subjects have been found to be higher in comparison to the other Universities.

Based on the threshold values for weighted scores for each paper/subject for a programme, a list of weak courses (papers) was selected. The list showed all average and below average or weak performances in different subjects.

For the pilot phase of the Scholar Support Programme in the current academic year, i.e., 2012-13, a total of 10 programmes (Five from Arts and Five from Sciences) were selected at the University level. The list of weak subjects was then cut down to 10/University by identifying the weakest and important papers at the programme level. This gives a total of 40 subjects for the pilot phase of the Scholar Support Programme.

The semester wise list of these papers (subjects) for the four Universities is given in the below tables:

List of Arts subjects identified for the Scholar Support Programme – Pilot phase 2012

Univ of Kerala	Univ of Calicut	Kannur Univ	MG Univ
Economics			
Writings on Contemporary Issues	Micro Economics - I	Micro Economic Analysis - I	General Economic Principles
History			
Foundations of Economics	Methodology and Perspectives of Social Sciences	Social formation in Early India	Social formation in Pre Modern India
Politics			
History of Modern World	Foundations of Political Science	Landmarks in the Modern World	Methodology and Perspectives of Social Sciences
English			
History of English Language	Methodology of Humanities	Methodology of Humanities	Methodology of Humanity and Literature
B.Com			
Principles of Management	Critical Reasoning, Writing and Presentation Skills	Critical Reasoning and Presentation Skills	Business Regulatory Framework

List of Science subjects identified for the Scholar Support Programme – Pilot phase 2012
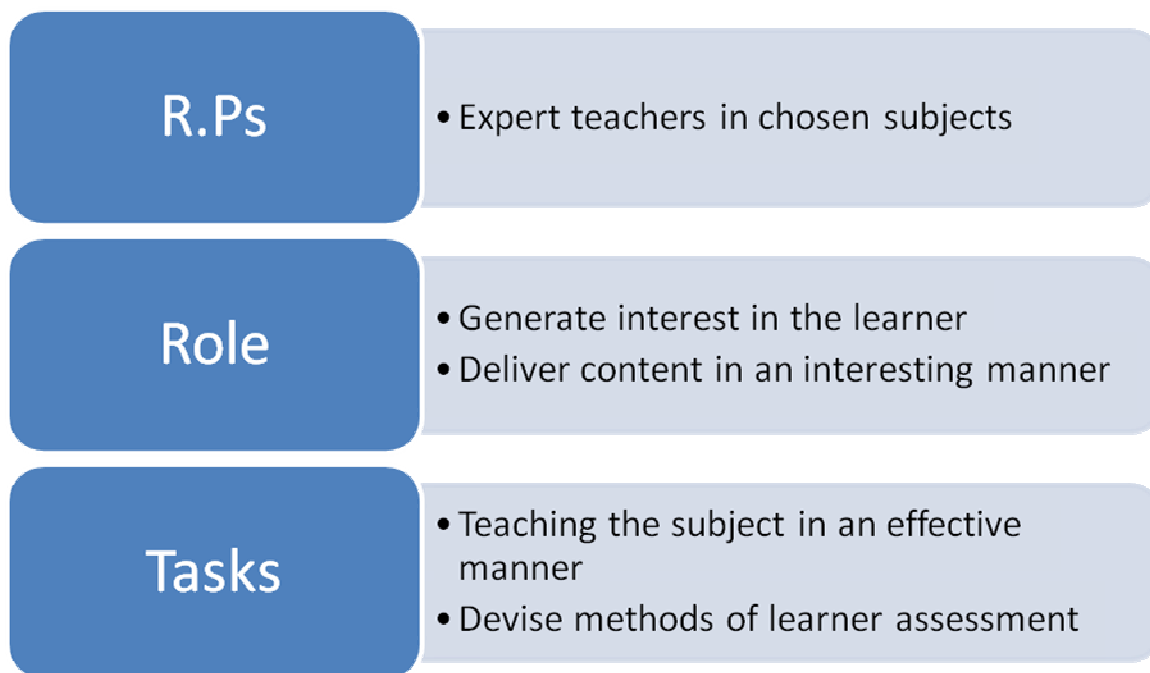
Univ of Kerala	Univ of Calicut	Kannur Univ	MG Univ
Physics			
Differentiation and Analytic Geometry	Mathematics	C++ Programming	Solid state Physics
Chemistry			
Rotational Dynamics and properties of matter	Foundations in Chemistry	Mechanics	Basic Theoretical and Analytical Chemistry
Maths			
Statistical Methods	Probability Theory	Basic Statistics	Vector Analysis, Differential Equation, Fourier series and Integral Transform
Zoology			
Microbiology, Phycology	General Methodology and Perspectives in Science	Methodology and Perspectives in Science	Animal Diversity – Non Chordata
Botany			
Animal Diversity	Animal Diversity	Diversity of Life - I	Cryptogams, Gymnosperms and Plant Pathology

The Scholar Support Programme – Resource person selection and design workshop

The Scholar Support Programme - pilot phase 2012 would focus upon 40 subjects from the undergraduate programme in four Universities in Kerala and provide additional curricular support to a selected group of students through the teachers handling respective subjects in the Colleges. The additional support would include video lectures of expert teachers based on syllabi, additional reading material and question bank provided through a web portal.

The immediate task to be carried out in this direction is content creation in the selected subjects for which a pool of resource persons has to be created. Resource person selection is one of the prime tasks to be carried out since the success of the entire programme depends upon it. As the programme is a focused one aiming special coaching for students in weak subject areas, the role of the Resource persons is considerable. The Resource person through his classes has to perform the multiple tasks of generating interest in students in the concerned subjects, delivering content and also carrying out an evaluation. Creation of a panel of expert teachers (both in service and recently retired faculty members) to act as resource persons is the immediate task ahead of us.

Resource Person – responsibilities

R.Ps	• Expert teachers in chosen subjects
Role	• Generate interest in the learner • Deliver content in an interesting manner
Tasks	• Teaching the subject in an effective manner • Devise methods of learner assessment

The organization of a design workshop for the resource persons would be the next task ahead of the team. The workshop would draw the broad contours of the programme as well as give a clear picture about the guidelines to be followed during creation and delivery of content and assessment tools.