



**Kerala private  
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സാമ്പത്തിക വ്യാവസായിക മേഖലകളിലെ ചലനങ്ങൾ ശ്രദ്ധിക്കണം.  
**കോമേഴ്സു ശില്പശാല**

ബി. കോ. കോഴ്സിന്റെ അക്കാദമിക് പട്ടണസംഘാടനം സംബന്ധിച്ച ഓഡിറ്റിലെ പശ്ചാദ്യക്ഷേപം തൃശ്ശൂർ ശ്രീ കേരളവർമ്മ കോളേജിൽ 1997 ജനുവരി 4, 5 തീയതികളിൽ നടന്നു. ജനുവരി 4-ാം തീയതി കാലത്ത് 10 മണിക്കൂർ കോളിംഗ് യൂണിവേഴ്സിറ്റി കോമേഴ്സു വിഭാഗം ഡോ. പി. ഡോ. കെ. സി. റിജയ്കുമാർ ശില്പശാലയുടെ ഉദ്ഘാടനം നിർവ്വഹിച്ചു. സാമ്പത്തിക-വ്യാവസായിക മേഖലകളിൽ ഉണ്ടാകുന്ന മാറ്റങ്ങളും പുതുതലമുറ ബി. കോ. ബിരുദകോഴ്സിൽ പ്രതിഫലിക്കണമെന്ന് അദ്ദേഹം പറഞ്ഞു. വിശേഷവിജ്ഞാന സമ്പാദനത്തെക്കുറിച്ചും ബിരുദലതലത്തിൽ ഉന്നതകൊടുപ്പം സാമാന്യ വിജ്ഞാനസമ്പാദനത്തിനായിരിക്കണമെന്നും സ്പെഷലൈസേഷൻ ബിരുദാനന്തര ബിരുദലതലത്തിൽ മതിയെന്നും ഉദ്ഘാടകൻ അഭിപ്രായപ്പെട്ടു. അക്കാദമിക് പുനഃസംഘാടനത്തോടൊപ്പം അധ്യാപകരുടെ പഠനനിലവാരവും ഉയരണമെന്ന് ഡോ. വിജയകുമാർ എടുത്തുപറയുകയുണ്ടായി. എ. കെ. പി. സി. ടി. എ. ജനറൽ സെക്രട്ടറി കെ. പി. ടി. വി. കെ. നായർ യോഗത്തിൽ ആദ്യം വഹിച്ചു. അക്കാദമിക് രംഗത്ത് കഴിഞ്ഞ വർഷങ്ങളിൽ സംഘടന നടത്തിയ വിപുലമായ പ്രവർത്തനങ്ങളുടെ സുപ്രധാനമായ ഒരു ഘട്ടത്തിലാണ് സംസ്ഥാനത്തിന്റെ വിവിധ ഭാഗങ്ങളിൽ വെച്ച് ഇത്തരം ശില്പശാലകൾ നടക്കുന്നതെന്ന് അദ്ദേഹം സൂചിപ്പിച്ചു. അക്കാദമിക് കമ്മിറ്റി കൺവീനർ ഡോ. പി. ജെ. ഫിലിപ്പ് കോമേഴ്സു ശില്പശാലയുടെ കൺവീനർ കെ. ദാമോദരൻ എന്നിവർ ശില്പശാലയുടെ ഉദ്ദേശലക്ഷ്യങ്ങൾ വിശദീകരിച്ചു. സംസാരിച്ചു. എ. കെ. ജി. സി. ടി. നേതാവുമാർ കോളിംഗ് യൂണിവേഴ്സിറ്റി സെനറ്റ് മെമ്പറുമായ പി. എൻ. പ്രകാശ്, കേരളവർമ്മ കോളേജ് പ്രിൻസിപ്പാൾ കെ. ബാലകൃഷ്ണൻ എന്നിവർ ആശംസകളർപ്പിച്ചു.

തിരിഞ്ഞു ബി. കോ. കോഴ്സിൽ വരുത്തേണ്ട മാറ്റങ്ങൾ പർച്ചേയ്കു പ്രൊഫസർമാരായ എ. എം. വാസുദേവൻ നമ്പൂതിരിപ്പാട്, പി. കോ. താനന്ദൻ, കെ. പി. കരുണാകരൻ, പോൾ സൺ തോമസ്, പി. എൻ. നാരായണൻ, കെ. ശശിധരൻ, ഡോ. വി. കെ. ജനാർദ്ദനൻ, എ. ശിവരാമൻ തുടങ്ങിയവർ വിവിധ ഗ്രൂപ്പുകൾക്ക് നേതൃത്വം നൽകി. 4-ാം തീയതി രാത്രിയും 5-ാം തീയതി കാലത്തും ആയി നടന്ന ഗ്രൂപ്പു പർച്ചേയ്കൾ വളരെ ഫലപ്രദമായിരുന്നു. മുഖ്യ വിഷയങ്ങളിലും (Core Subjects) ഐച്ഛിക വിഷയങ്ങളിലും (Elective Subjects) വിശദമായ സിലബസും കോഴ്സിന്റെ അക്കാദമിക് ഘടനയും ഈ പർച്ചേയ്കളിലൂടെ തയ്യാറാക്കപ്പെട്ടു. രണ്ടാം ടീമിന് ചേർന്ന ഡെലിഗേറ്റ് സെഷനിൽ ശില്പശാല കൺവീനർ കെ. ദാമോദരൻ അദ്ധ്യക്ഷത വഹിച്ചു. വിവിധ ഗ്രൂപ്പ് കൺവീനർമാർ അപരറിപ്പിച്ച നിർദ്ദേശങ്ങൾ ഈ സമ്മേളനത്തിൽ പൊതുപർച്ചേയ്കു വിധേയമാക്കി അംഗീകരിക്കപ്പെട്ടു. നിരന്തരമായ ആഭ്യന്തര മൂല്യനിർണ്ണയവും (Continuous Internal Evaluation) സെമസ്റ്റർ സമ്പ്രദായവും ഡിഗ്രിതലത്തിൽ ശുപാർശ ചെയ്യപ്പെട്ടിട്ടുണ്ട്. ഈ നിർദ്ദേശങ്ങൾ അക്കാദമിക് കമ്മിറ്റിയുടെ വിശദ പരിശോധനയ്ക്കുവേണ്ടി സമർപ്പിക്കും. ജനുവരി 5-ാം തീയതി ഉച്ചയ്ക്ക് ശില്പശാല സമാപിച്ചു. കേരളവർമ്മ കോളേജ് എ. കെ. പി. സി. ടി. എ. ബ്രാഞ്ചിന്റെ നേതൃത്വത്തിലാണ് ശില്പശാല സംഘടിപ്പിക്കപ്പെട്ടത്. ഉദ്ഘാടനസമ്മേളനത്തിൽ തൃശ്ശൂർ ജില്ല സെക്രട്ടറി ഇ. എം. ആൻറണി സ്വാഗതവും കേരളവർമ്മ കോളേജ് ബ്രാഞ്ച് സെക്രട്ടറി ടി. ആർ. ശിവശങ്കരൻ നന്ദിയും പറഞ്ഞു. കോളിംഗ് യൂണിവേഴ്സിറ്റി കോമേഴ്സു വിഭാഗം റിഡർമാരും എ. കെ. പി. സി. ടി. എ. യുടെ മുൻകല പ്രവർത്തകരുമായിരുന്ന ഡോ. കെ. ബി. പവിത്രൻ, ഡോ. കെ. പി. മുരളീധരൻ എന്നിവർ ശില്പശാലയ്ക്കുവേണ്ട വിശ്വപര്യേടം നൽകാൻ അനുമതിയിരുന്നു.

തൃശ്ശൂർ കേരളത്തിലെ വിവിധകോളേജുകളിൽ നിന്നെത്തിയ അധ്യാപകർ ഗ്രൂപ്പുകളായി

# ശ്രീ മെയിൻ സിസ്റ്റം

കേരളത്തിലെ ഉന്നത വിദ്യാഭ്യാസരംഗത്ത് ഏറ്റവും അധികം പർച്ചയെടുക്കുന്ന വിഷയമാണ് കോഴ്സുകളുടെ പുനഃസംഘടന. ഇന്നത്തെ ഡിഗ്രി കോഴ്സുകൾ പലതും കാലോചിതമായ പരിഷ്കരണം കരുത്ത് നിൽക്കുകയാണ്. വിവിധ വിഷയങ്ങളിൽ എ കെ പി സി ടി എ സംഘടിപ്പിച്ച ശില്പശാലകളിൽ ഇന്റസംബന്ധമായ ഗൗരവരമായ പർച്ചകൾ നടന്നു കഴിഞ്ഞു. നമ്മുടെ സംസ്ഥാനത്ത് വിദ്യാഭ്യാസമന്ത്രിയും വൈസ്പ്രിൻസിപ്പൽമാരും നിരന്തരമായ അഭിപ്രായപ്രകടനങ്ങളും പ്രവർത്തനങ്ങളും നടത്തിവരുന്നു. ഡിഗ്രിതലത്തിലെ ഇന്നത്തെ അവസ്ഥ മാറ്റിയെടുക്കാൻ ഉറപ്പു കുന്ന മാർഗങ്ങൾ തേടുകയാണ് കേരളത്തിലെ സർവ്വകലാശാലകൾ. കേരള സർവ്വകലാശാല ജനകീയമായ രീതിയിൽ തെളിവെടുപ്പുകളും പർച്ചകളും നടത്തിക്കഴിഞ്ഞു. ജനകീയരണനാമമാത്രമായ മഹാത്മാഗാന്ധി സർവ്വകലാശാലയുടെ തീരുമാനങ്ങൾ എടുത്ത് പ്രഖ്യാപിക്കുന്നുണ്ട്.

ജീവമായി പർച്ചയെടുക്കുന്ന ഒന്നാണ് ശ്രീ മെയിൻ സിസ്റ്റം. ഇപ്പോൾ നിലവിലുള്ള ഒര മെയിനും രണ്ട് സബ്സിഡിയറീസും എന്നതിനു പകരം സബ്സിഡിയറീസ് പൂർണ്ണമായി ഒഴിവാക്കിക്കൊണ്ട് മൂന്നു വിഷയങ്ങളും മുഖ്യവിഷയങ്ങളായി പഠിക്കുന്ന രീതിയെയാണ് ശ്രീ മെയിൻ സിസ്റ്റം എന്നു പറയുന്നത്. ഇന്ത്യയിലെ ഏതാനും സർവ്വകലാശാലകളിൽ വളരെക്കാലമായി ഈ രീതി നിലനില്ക്കുന്നു. പല സർവ്വകലാശാലകളും ശ്രീ മെയിൻ മാറ്റി സിംഗിൾ മെയിൻ രണ്ട് സബ്സിഡിയറീസ് എന്നാക്കിയിട്ടുണ്ട്.

ശ്രീ മെയിൻ ബിരുദത്തിന്റെ പ്രധാന മേന്മയായി പറയുന്ന കാര്യം മെയിൻ വിഷയങ്ങളായ മൂന്നിൽ ഏതിനു വേണമെങ്കിലും ബിരുദാനന്തരബിരുദത്തിന് അഡ്മിഷൻ കിട്ടുമെന്നതാണ്. എന്നാൽ സിംഗിൾ മെയിനിൽ പഠിച്ചുവരുന്ന വിദ്യാർത്ഥി പഠിക്കുന്ന മണിക്കൂറുകൾ ആ വിഷയത്തിന് 3 മെയിനിൽ കിട്ടില്ലായെന്ന കാര്യം ശ്രദ്ധിക്കേണ്ടതാണ്. അതുകൊണ്ടുതന്നെ ശ്രീ മെയിൻ എന്ന പ്രയോഗം

ഇന്നത്തെ സിസ്റ്റത്തിനു ബദലായി സ

**കേരള പ്രൈവറ്റ് കോളേജ് ട്രിപ്പൂർ** ലക്കം: 137 ജനുവരി 1997

എഡിറ്റർ: **മാനേജിംഗ് എഡിറ്റർ:**

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തെറ്റാണെന്നും മൂന്ന് സബ്സിഡിയറീസ് എന്നാണ് വേണ്ടതെന്നും വാദിക്കുന്നു. ഇന്നത്തെ ഫിസിക്സ് മെയിൻ പഠിച്ചുവരുന്ന കൂട്ടിയെക്കാരെ പിന്നിലായിരിക്കും 3 മെയിനിൽ ഒന്നായ ഫിസിക്സ് പഠിച്ചുവരുന്ന കൂട്ടിയുടെ ആവിഷയത്തിലുള്ള പ്രാവീണ്യമെന്നത് തർക്കമാറവസ്തുതയാണല്ലോ. അറിവിന്റെ ആഴത്തിലും പരപ്പിലുമുള്ള വൻ വിചാരസമ്മതിമന്ദം ഇക്കാലത്ത് 3 വിഷയങ്ങളിലായി നേടുന്ന സാമാന്യജ്ഞാനമല്ല ഏതെങ്കിലും ഒരു വീഷയത്തിലേക്കിലും ഭേദപ്പെട്ട നിലവാരത്തിലെത്തുകയാണ് ബിരുദതലം ലക്ഷ്യമാക്കേണ്ടതെന്ന അഭിപ്രായത്തിനാണ് വിവിധതലത്തിൽ നടന്ന ചർച്ചകളിൽ മുൻതൂക്കം കിട്ടുന്നത്. അതുകൊണ്ടുതന്നെ ത്രി മെയിൻ സബ്സിഡിയറീസ്കാര്യങ്ങളിൽ തീരുമാനമെടുക്കുമ്പോൾ തികഞ്ഞ അവധാനത സർവകലാശാലയും സർക്കാറും കഠിനീകേണ്ടിയിരിക്കുന്നു. കോഴ്സുകളുടെ കാര്യത്തിലായാലും വിദ്യാർത്ഥികളുടെ ഭേദിയുടെ കാര്യത്തിലായാലും ജാഗ്രത പുലർത്താതിരിക്കുന്നതിൽ പുകൾപെറ മഹാത്മാഗാന്ധി സർവകലാശാല അടുത്ത അധ്യയനവർഷത്തിലേക്ക് ത്രി മെയിൻ സിസ്റ്റത്തിലുള്ള 54 തൊഴില

ധിഷ്ഠിത കോഴ്സുകൾ പ്രഖ്യാപിച്ചു കഴിഞ്ഞു. അടുത്ത അധ്യയനവർഷത്തിൽ ആരംഭിക്കാൻ സാധ്യമാകത്തക്ക രീതിയിൽ ജനുവരി 31 നു മുൻപ് തന്നെ അപേക്ഷ സമർപ്പിക്കാനും ആവശ്യപ്പെട്ടിരിക്കുകയാണ്. കോഴ്സുകളുടെ ഉള്ളടക്കം, സിലബസ്, ഫാക്കൽറ്റി, ഇൻഫ്രാസ്ട്രക്ചർ സൗകര്യങ്ങൾ, പ്രാദേശികരോ തൊഴിൽപരമോരോ ആയ ആവശ്യകത എന്നിവയെക്കുറിച്ചു് വ്യക്തമായ ധാരണപോലുമുണ്ടാകാതെ വ്യാപകമായ തോതിൽ കോളേജുകൾ ത്രി മെയിൻ കോഴ്സുകൾ നടത്താൻ ഇറങ്ങിപ്പുറപ്പെട്ടാൽ എന്തായിരിക്കും സ്ഥിതി !

ത്രീ മെയിൻ എന്നത് ഇന്നത്തെ 'ഫാഷൻ' ആകേണ്ട ഒന്നല്ല. പല സംസ്ഥാനങ്ങളിലും ത്രി മെയിനിൽ നിന്നും സിംഗിൾ മെയിനിലേക്ക് മാറിക്കൊണ്ടിരിക്കുന്ന അവസ്ഥയിൽ അവരുടെ അനുഭവങ്ങളിൽനിന്നും പരം ഉറക്കൊണ്ടുകൊണ്ടുമാത്രമേ നമ്മുടെ സംസ്ഥാനത്തിൽ ഈ പരിഷ്ക്കാരം നടപ്പിലാക്കാൻ പാടുള്ളൂ. അതോടൊപ്പം നമ്മുടെ നാട്ടിലെ സാഹചര്യങ്ങളും കണക്കിലെടുക്കേണ്ടതാണ്. □

## Restructuring existing courses and introducing new triple main courses at the degree level

Academic Committee K. E. College Mannanam

The Academic Committee has made a detailed study of the proposal of the M. G. University syndicate committee to give priority to Triple Main Courses from the next academic year. The following are the observations of the committee.

1. Though there is considerable scope for introducing socially relevant and job oriented courses at the degree level, the introduction of Triple Main Course cannot be regarded as the panacea for all academic and service problems that could confront the colleges in the context of delinking pre-degree courses.

A mechanical replacement of traditional courses by Triple Main Courses would be like throwing the baby along with the bath water. There is still relevance for single main theoretical courses on a selective basis at the degree level for those who intend to pursue higher studies. To insist that every inter-disciplinary course at the degree level should have a job-oriented component is an academically unsound proposition. This would defeat the objective of greater diversification of courses at the degree level.

(Contd. to page 22)

# OPPOSE THE CONSUMERIST CULTURE

Dr. K. K. THECKEDATH

President, AIFUCTO

When the Govt. of India adopted the National Policy on Education, 1986 (NPE), this signified that the ruling classes were finding that the education system that they themselves had built in the past no longer suited their present interests. The NPE reflected the deepening all round crisis of capitalism in our country.

The economic background in which the NPE was adopted may be described in the following words: "In the face of deepening international crises of capitalism, the ruling classes in our country find it increasingly necessary to rely on capital intensive technology in order to successfully compete in the international market, particularly when exports are increasingly determining their level of economic activity, as also to maintain and increase their profit levels. The necessity finds expression in the recent shifts in the economic strategy—the thrust of the Seventh Plan, the 1985 budget, the heavy concessions given to the private sector, liberalisation of exports, etc. The Seventh Plan document expresses this eloquently: 'The success of policy adjustments will therefore depend, among other things, on the responsiveness of large firms, and on their willingness to equip for and invest in substantial expansion of export operations instead of continuing to rely on the domestic market ... on large merchandising houses which would mobilise finances, organise supplies and develop commercial contacts to establish export markets.'

"Having already narrowed the domestic market, dependence on exports becomes necessary for the ruling classes to perpetuate their rule. This requires the induction of modern foreign technology, leading to an increase in foreign collaborations and opening the doors of our economy wider to exploitation by multinationals, 'virtually freeing of exports from the adverse impact of import restrictions'.

There is an important consequence of this for the field of education. The large scale induction of modern technology requires a manpower capable of manning it. This is what is implied when the Plan document talks of "high quality and excellence" in education, and the "removal of obsolescence and modernisation of technical education". The meaning of this is that a small volume of intellectual manpower, trained in modern methods, is the need of the hour, while the vast masses can remain illiterate. The education system must, therefore, be reoriented to suit contemporary needs of the ruling classes.

Even when this was the programme of the ruling classes in 1986, with the introduction of the policy of liberalisation in 1991, the crisis in education has become deeper. The thrust of the new economic policy of 1991 is privatisation, deregulation, globalisation and liberalisation. The effect of this policy on education can be described in the following words:

"The entire education system is crisis-ridden because of the governments retreat from its commitment to expand state sponsored education. The drive for privatisation and commercialisation of education is motivated by the liberalisation policy. The cuts in educational outlays come as a part of the cuts in social expenditure. This has led to the closure and decay of public educational institutions down to the primary school level. Simultaneously there are steep hikes in tuition fees and naked profiteering through capitation fees in professional courses in higher education".

This crisis referred to above can be gauged from the fact that the state is now openly giving up its commitment and constitutional obligation of Article 45. While Article 45 makes it the duty of the State to give free and compulsory education to all children until they complete the age of 14 years, the estimate is that nearly 8 crores of children in the age group of 6-14 are outside the school system. On the assumption of a 1.5 percent growth rate of the population the estimate was of 4.67 crores, but on the more reasonable estimated growth rate of 2.5 percent, the number of children outside schools is 8 crores in 1990 and close to 9 crores in 1995.

The NPE had visualised a scheme of non-formal education with the avowed objective of reaching out to such children. But it is the experience of many states that the so called 'anganwadi system' is a fraud on the children of the poor, and that further it exploits the employees in these anganwadis. The experience in Maharashtra is that most anganwadi teachers are paid inadequate sums of money, sometimes as low as Rs. 100 per month.

As regards primary education, the commitment of the State to fund primary

education is marginal. In the city of Bombay, for example, the free municipal schools can only take in about 55% of the children in the age group 6-14. The remaining children are left out of any state responsibility. In 1992-93 out of the total number of 2164 primary schools, 1279 were municipal schools and 885 were private primary schools. The Corporation or the state do not give any grants to these private primary schools. The conditions in which children take education in the municipal primary schools defies description.

The plight of secondary education is also similar. The state governments wash their hands of any responsibility to support many of the secondary schools. Taking the example of Maharashtra, out of a total number of 11,000 secondary schools, 2400 schools are unaided schools. The number of unaided schools is rapidly growing. Schools are granted permission to be started on condition that they will not be given aid. In the case of English medium schools which are being opened, an undertaking is taken from the managements that they will never ask for grants.

The system of unaided institutions is being encouraged at the college level. Large numbers of colleges are working without any grants. At the level of professional colleges, the recent Supreme Court judgement on the matter of capitation fees has given an escape route to the state government. The stipulation of paid seats and free seats is being cleverly used by several state governments to escape all responsibility of funding. In Maharashtra, in a college of medicine a paid seat commands a fee of Rs. 1,60,000 and a free seat commands a fee of Rs. 3,000. Thus for two seats the collection is Rs. 1,63,000 per year. The amount that accr-

ues to the managements is now more than what would otherwise have come by way of capitation fees. At the same time the Government of Maharashtra has escaped all responsibility of funding medical education. Thus the Supreme Court judgement has been utilised to increase the incomes of the sharks in education.

It is to be noted that one of the ways in which these unaided institutions operate is by exploiting the teachers and non-teaching employees, who are paid much below the prescribed scales of pay. For example, in Orissa many of the teacher in unaided arts, science, commerce colleges are paid merely 600 rupees a month. In Bihar most of the colleges receive irregular payments, say a small amount at Holi time and another sum at the time of Diwali.

#### PUNNAYYA COMMITTEE REPORT:

Along with this underpayment of teachers, and as a reverse of this coin, is the steep hike in fees which is being introduced in educational institutions at all levels. The Punnayya committee (1992-93) recommendations should be considered in this background. Though the report says that funding should be an essential and mandatory requirement to support higher education" it also recommends raising of fees at all levels. The report states: "There is a strong case for revising tuition and other fees and let this not be a one time phenomenon but the revision of fees should be undertaken periodically, so that the same are adjusted to the rise in cost of living".

The recommendations of the Punnayya Committee for generating funds are based not on any inability of the Central Government to mobilise resources. The Committee wants to give an alibi to the

Government to escape the responsibility of funding education. This is the reason that the Punnayya Committee is recommending resource generation through regular and repeated fee increases in the universities and colleges. The Central Government can mobilise funds, but the Punnayya Committee does not refer to the possibility.

The Union Government on its part, has been shirking the responsibility of providing funds for educational every level, university, secondary, primary, adult literacy and at the level of early child care. In spite of the grandiose declaration that the Government would spend 6% of GNP on education, the figure continues to be 3% or less. India continues to have nearly 50% of the world's illiterate population among its citizens.

Our country with its nearly thousand million population can make no progress in any field without investing much more in education. The first task in this direction must be the provision of free and compulsory education to all children upto the completion of the age of 14. On the one side this means that adequate financial commitment should be made for the provision of mid-day meals and dresses for children in primary schools. On the other hand, it would mean the abolition of child labour and deterrent punishment for employers of child labour.

The recommendations of any fee hikes at any level, would, if implemented, lead to drop in enrolment at that level, and this would adversely affect the education of the children of the poorer sections, particularly of girl students. The democratic movement should oppose all such moves to increase fees. These recommendations are made with the malafide intention of bailing out the rich and putting the burden

on the poor. We should suggest that a special educational cess should be levied from the profits of the industries and from the landlords, and this should supplement state funding of education.

#### MORAL CRISIS AND ACCOUNTABILITY OF TEACHERS:

The crisis in education that we have referred to also has a moral dimension. Schools and colleges, especially the college campuses are coming under the degrading consumerist culture that our rulers are propagating. Under globalisation of our economy we are subjected to high pressure advertising over the television of items such as new brands of cigarettes and liquor. The introduction of capitation fees and privatised institutions of education is making money power the deciding component in all dealings. Corruption of politicians, as has been exposed by the hawala racket and the involvement of central ministers and hypocritical leaders of certain opposition parties, is giving our young students ideas about short cuts to success.

In this situation, our teachers have a great responsibility to set the right example. While it is the aim of education to imbue the students with a sense of patriotism, uprightness and respect for honest labour, the consumerism which is being preached by the Government and the mass media is having its deleterious effect on the lives of a large section of our teachers. Teachers often fail to present themselves as examples of honesty. Consumerist values are making more and more teachers enter into money making ventures including private tuition rackets, which ensure high results on payment of money.

In the present set up where teachers are grossly underpaid, where they are not

paid regularly and have no guarantee that they will get their pay in the next month, there is the felt need to supplement their incomes by way of giving private tuitions. The school code in Maharashtra permits teachers to coach upto five students privately.

However, under present policy of the Government which encourages consumerism, some sections of teachers are not only forming tuition rackets, but in the process they are becoming victims of the worst kinds of competition and rivalry that inevitably arise. In such a situation, the teachers are not able to resist the growing criminalisation of the campuses.

There is one common feature which has emerged throughout the country in the past twenty years as a result of the movement of the teachers, and that is the considerable job security that has been won in most states. At the same time, there is an erosion of work culture taking place on a wide basis, partly because teachers are influenced by the commercialised milieu in which they find themselves. Hence the question of accountability of teachers is being raised by the people.

Accountability of teachers is becoming the demand of large sections of the people. In this context one may mention a recommendation of the Ashok Mitra Commission of West Bengal. In para 19-50 the Ashok Mitra Commission recommends that promotions and increments of the teachers should be based on objective assessment records. The commission recommends assessment by students should be included. There is a need to support this recommendation.

Assessment of teachers by students is no doubt fraught with dangers. Unscrupulous managements can manipulate



student opinion against honest teachers. However the teacher's movement should be able to evolve fool proof methods to obtain objective assessments by students. It may be suggested that a properly administered teacher assessment questionnaire (TAQ) as also the returns of attendance filed with the office can both be considered to provide a feedback on teachers' performance. There are difficulties in making assessments of teachers. But it is a task placed before the democratic movement of teachers to evolve suitable methods of assessment. The democratic movement should take full responsibility for improving the relations between teachers, students and their parents, that is, among the three main components in the educational process.

**UNITED MOVEMENT NEEDED:**

While the teachers should do introspection on the matters referred to above, we must not forget that the main fountain of corruption is the Government which is pushing its policies and the degenerate capitalist and consumerist culture. The economic policies of the Government have to be opposed. This has to be done on

the basis of broad democratic unity of teachers at all levels.

Immediately we should demand the Government the following:

- (i) to strengthen our state funded education system.
- (ii) to legislate providing free and compulsory education for all children until they complete the age of 14 years.
- (iii) to improve and modernise all curricula and syllabi
- (iv) to enhance investment in research and development.
- (v) to ensure that a minimum of 10% of the GNP is spent on education.
- (vi) to democratise the governance of educational institutions

Towards the achievement of these objects the teachers' movement should appeal to students, youths, non-teaching staff of educational institutions, scientific workers, research scholars, academic administrators and all the patriotic people of our country to build up a powerful movement for the education of our people so that they are able to face the challenges of the twenty-first century.

**കാലടി ശ്രീശങ്കരാ കോളേജ് കൗൺസിൽ  
തെരഞ്ഞെടുപ്പ്**

കാലടി ശ്രീശങ്കരാ കോളേജ് കൗൺസിലിലേക്ക് നടന്ന വാശിയേറിയ തെരഞ്ഞെടുപ്പിൽ എ. കെ. പി. സി. ടി. എ സ്മാനാർത്ഥികളായ ശ്രീ കെ. കൃഷ്ണദാസ്, ശ്രീ എസ്. രവീന്ദ്രൻ എന്നിവർ തെരഞ്ഞെടുക്കപ്പെട്ടു. പി. സി. ടി. എ, കെ. പി. സി. ടി. യു. സംയുക്ത സ്മാനാർത്ഥികളെയും ഇവർ പരാജയപ്പെടുത്തിയത്.

കെ. കൃഷ്ണദാസ് സംഘടനയുടെ ബ്രോഞ്ചു സെക്രട്ടറിയും രവീന്ദ്രൻ സംഘടനയുടെ അക്കാദമിക് കൗൺസിൽ അംഗവുമാണ്.

# Higher Education and the Restructuring of Degree Courses

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Education plays a crucial role in shaping the destiny of a nation. D.G. Ram Reddy, former chairman of the U. G. C. in his book on higher education says, "no development measures or inputs initiated into society by the state or any other agency will have their desired impact unless the people are beyond a threshold of readiness to participate in the process of development and education is, perhaps, the only force to take them beyond this threshold". The percentage of adult literacy in the highly industrialised countries of the world was 98 in 1985 whereas in the middle income countries it was 72 and the low income countries it was 32. It is pointed out that rapid expansion cannot take place unless the literacy rate is above 70 percent. The situation in India is far from satisfactory as its current literacy is only 52.11 percent and it is feared that by the turn of the century the largest number of illiterates will be in India. Though Kerala state is an exception in this regard, it is not free from many of the crises that confront education, particularly higher education.

Strengthening and modernizing school education is a prerequisite for improving higher education. Education at the school level is far from satisfactory. Outmoded syllabi, stereotyped notes, colonial examination system,

absence of adequate infrastructure facilities and vocationalisation are some of the problems facing secondary education. At least 50 percent of the students by the time they reach the Higher secondary stage should be in the vocational stream. But in our state we have hardly achieved 15 percent of vocationalisation at this level.

The pre-degree course which is now a part of higher education in the state should be delinked from colleges and become a part of school education. Though the process is a complex one, the change, according to many educational experts, is indispensable to improve the quality of higher education. The Kothari commission is of the view that the continuance of plus two classes in colleges is "bad for the universities and colleges.. is bad for the secondary schools". The Commission had strongly recommended that at least by the end of the fifth five year plan the course should be transferred to schools! In almost all states the plus two course has ceased to be a part of university education. So the pre-degree students are not able to take part in All India Sports and Cultural competitions conducted at the university level. They are also not able to participate in the athletic and cultural competitions held at the national level for school children because they are not

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apart of school education. The government must give top priority to this issue and enter into a dialogue with all concerned to make the transfer of the pre-degree course to the school smooth.

The words of Pandit Jawaharlal Nehru on the aims and objectives of university education are well-known: "a university stands for humanism, for tolerance, for reason, for the adventure of ideas, for the search of truth. If the universities discharge their duties adequately, then it is well with the nation and the people". Though the fundamental values universities represent are largely unrelated to time or circumstance, their functions change from time to time. In broad terms the functions of universities in the modern world are to seek and cultivate new knowledge, to engage fearlessly in the pursuit of truth, to provide the right kind of leadership in all walks of life, to provide society with competent men and women trained in agriculture, arts, medicine, science and technology and to try to promote social justice and equality.

That our universities and colleges have not lived upto our expectations about them is very evident. The Education Commission Report of 1964-'66 says "over a large area of education, the content and quality are inadequate for our present needs and future requirements". Some of the reasons for this fall in standards and crisis in higher education are paucity of finance, out dated curricula and examination system, obsolete teaching methods, lack of proper co-ordination between education and employment, lack of planning and the highly centralised system of governance. In the 7th Five-year plan the allocation for higher education was 22 percent of the

education budget. It was only 8 percent in the 8th plan. The allocation for higher education was 28.7 percent in Canada 25.1 percent in the U.S.A. and 21.8 percent in China. If we are to improve the quality of education at least 6 percent of G N P should be set apart for it. (Now it is only a meagre 3.7 percent of GNP)

### **Restructuring of Degree Courses**

The courses offered in our colleges and universities, at present, are, by and large, cut off from the springs of the people's life and culture. The system that we follow is a legacy of the British and it is said to be fit only for training clerks. Although job-oriented education is not the primary aim of universities, we cannot afford to ignore the need for introducing new subjects in the existing degree courses to help the students find a job or engage in some useful work on their own. Many of the conventional course have become so outdated and divorced from the real needs of our people that the problem of drop outs in these courses is increasing. Mohammed Peer in his book 'Higher Education and Employment' gives us an alarming picture of the problem of unemployment in Karnataka. The number of post-graduates who were unemployed by 1988 was Seventy nine thousand in that state. The number of unemployed graduates who had registered for employment was about 70000 in 1981. The situation is not different in other states, particularly in Kerala. The number of graduates who have registered themselves with the employment exchanges upto 31 May 1996 in Kerala is 151807. Post-graduates number 31638. The proposal of the kerala university to restructure Degree-

Courses cannot be viewed in isolation from the need to change this situation.

The first national seminar on restructuring First Degree Courses was held at Sree Venkateswara College in Andhra Pradesh in March 1981. A list of 33 new Courses with elaborate details about the course content was drawn up at the seminar. These courses are grouped under six sections. They are: (1) Agriculture and related sciences (2) Bio-science and pharmaceuticals (3) chemical technology (4) Construction technology (5) Electronics and applied electrical engineering (6) Social Sciences.

A U. G. C document entitled 'Vocationalization of First Degree Education' lists 28 courses in detail. Some of these courses are Industrial Chemistry, Food science, Clinical Nutrition and Dietetics Tourism and Travel Management.

For the last few years the AKPCTA has been seriously engaged in discussions and holding workshops on the restructuring of Degree Courses and it has already published details about 7 restructured courses. Seminars on restructuring degree courses in various subjects were held very recently.

The following proposals may be considered when restructuring of courses is carried out extensively.

a) Make a thorough study of the manpower needs of the country and of the state in particular and introduce new courses on the basis of this study.

b) The number of students admitted to each course should be limited and different courses should be sanctioned to different colleges.

c) The facilities in the existing colleges must be utilized for the new courses. Restructuring should not lead to commercialisation and exploitation.

d) Courses in core subjects should be the central programme of higher education.

e) As the new courses are to be taught by the existing teachers, comprehensive training programme is to be planned.

f) If the three main system is adopted the number of working hours per week should be raised to 30.

g) The fundamental objectives of academic re-organization cannot be realised in the existing system. So semester system, comprehensive internal evaluation, project work and seminars etc should become an integral part of restructuring.

h) Teachers' organizations and students are to be consulted before the changes are introduced.

i) When the courses are restructured the importance of language study should not be reduced. A sound knowledge of languages is indispensable to every student for effective communication and for acquiring independently the latest knowledge from books, magazines and newspapers. The study of languages has a much greater purpose. It enables the students to imbibe moral and cultural values and thereby blossom out as good human beings.

## Abstract of Ph. D. Thesis

# Studies on some aspects of the culture of Mozambique tilapia, *Oreochromis mossambicus*

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Thesis submitted — Jan. 1996

Degree awarded — Sept. 1996

Tilapia are important source of food for man, and they are among the most widely cultured fishes in the world, But it has several undesirable characteristics which discourage the fish farmers. The major problems encountered in the aquaculture programme of *O. mossambicus* are the early maturity and prolific breeding leading to overcrowding and stunted growth. The present study carried out is an effort to overcome these problems and to enhance growth and production.

The following aspects have been highlighted in this thesis.

1. Growth and production of male *O. mossambicus* fingerlings in cages were evaluated using different stocking densities. Role of pelletized supplementary feed with four different protein levels on each stocking density was also investigated.

2. The effect of dietary hormones on growth and production in monosex culture has been evaluated. Hormones have been administered singly and in combination, and the growth response in terms of survival rate, specific growth rate, net production, dressing percentage and proximate composition have been estimated. The

(..contd. from page 12)

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# CONTRIBUTION OF KERALA TO MATHEMATICS

JOHNY K. JOHN, Department of Mathematics, Mar Ivanios College, Trivandrum

Ancient Indian astronomy and mathematics attracted the serious attention of scholars even in the early days of western Indological research. But unfortunately this enthusiasm concerning Indian achievements gradually faded away. There is a strong feeling that no significant work in mathematics took place in India after the time of Bhaskara II (born in AD 1114.) But this is far from truth. The development of Hindu mathematics did not come to a standstill after this period. One reason for this feeling is that important work of this

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results are discussed in the context of recommending a suitable hormone combination for the culture of male tilapia.

3. Role of four levels of dietary protein on female broodstock, development and fry production has been assessed in detail. The reproductive performance of the fishes such as maturity stages of ovary, gonadosomatic index, fecundity, egg size, hatchability of eggs and fry survival have been investigated and the results have been discussed.

4. Broodstock exchange programme was carried out in hapa to evolve maximum number of fertile eggs and frys. Four different exchange treatments with varying broodstock sex ratios were tested. The results discuss the best exchange treatment and the optimum broodstock sex ratio for maximum seed production in tilapia. □

period were mainly in Malayalam and in other regional languages,

The beginning of astronomical and mathematical studies are shrouded in obscurity. According to traditions the legendary astrologer cum astronomer Vararuci is regarded as the father of ancient Kerala mathematics and astronomy.

## Important mathematicians cum astronomers of ancient Kerala

### 1. Vararuci

He is associated with the introduction of mathematics and astronomy to Kerala. He is the father figure in the astronomical tradition of Kerala. He is supposed to have lived in the 1st half of the 4th Century. His name is attributed to the authorship of the 248 'moon-sentenus' popularly called vararuci-vakyas. These were used for calculation of the position of the sun and moon and they were taught to the children in the primary stage of education itself.

### 2. Haridatta (AD 650-700)

He was born at Tirunavay in Kerala. He introduced a new system of astronomical computation called Parahita, which presented distinct advantages over the prevailing Arybhatan system. His work Grahacaranitandhana is the working manual of this system. This system became very popular in Kerala and has played a leading role in the propagation and practice of astronomy in Kerala.

3. Govindasvamin (AD 800-850)

He was the court astronomer of King Ravi Varma Kerala. His elaborate commentary on Mahabhaskariya contains new mathematical ideas and computations, which are not yet expounded in terms of modern mathematics.

4. Govindabhattachari of Talakkulam (AD 1237-95)

He belonged to the village of slattar in Malabar. He started a system of computation which was continued for more than 700 years. His popular works are Muhuratna and Muhurtapadavi which formed the basis for several later works.

5. Madhava of Sangamagrama (AD 1340-1425)

He belonged to Sangamagrama, now identified as Irinjakkuda. He was an acute mathematician and was considered as an authority on spherical mathematics. He was often referred by later writers as 'golavid', expert on spherical mathematics. His famous works are venvaroha and Aganita. He is believed to be the first scholar to calculate the value of  $\pi$  on the basis of an infinite series.

6. Paramesvara of Vataseni (AD 1360-1455)

He belonged to Alattur village in Kerala. He was the founder of the Dragganita system. He was the most outstanding astronomer and mathematician of ancient Kerala. He had written many important works, dealing with different branches of mathematics. His most important work is Dragganita in which he revised the old parahita system introduced by Haridatta. He wrote standard commentaries on all popular works on astronomy and astrology.

7. Nilakantha Somayaji (AD 1444-1545)

He belonged to kundapura in Mala-

bar. He was the disciple of Damodara, the son of Paramesvara. He was an ardent advocate of the Dragganita System. He was patronized by Azhvancheri Tamprakal, the hereditary religious head of Namputiris of Kerala. Tantrasangraha and Golasara are his important works. The Tantrasangraha is a comprehensive treatise which in eight chapters containing 432 verses deals with different topics in mathematics and astronomy. His elaborate commentary on Aryabhataiya is considered as a masterpiece.

8. Sankara Variyar (AD 1500-1560)

He was a student of Nilakantha somoyaji. He is the author of Laguvivrti commentary on Tantrasangraha. He also wrote Kriyakramakari which is considered as an outstanding commentary on the famous work Lilavati of the famous mathematician Bhaskaracarya.

9. Sankara of Mahisamangalom (AD 1494 to AD 1570)

He was born in Perumanam village near Trichur. All his works are in Malayalam. His aim was to popularize the knowledge contained in earlier sanskrit books. His works include Ganitasara, Jatakakrama. He is also reputed to have composed a register of muhurta's for 1000 year.

10. Jyesthadava (AD 1500-AD 1610)

He belonged to the Parannottu family in Alattur village in south Malabar. He has the distinction of being the author of the popular Malayalam work Yuktibhasa which is an elaborate and systematic exposition of the rationale of Mathematics in its part I and astronomy in its part II.

11. Acyuta Pisarati (AD 1550-1621)

He was perhaps the greatest non-Brahmin Mathematicians of ancient

Kerala. He was a scholar not only in astronomy and mathematics but also in Sanskrit grammar, medicine and literature. It was he who enunciated, for the first time correction called the "Reduction to the ecliptic" in Indian astronomy. This correction was introduced in western astronomy by Tycho Brahe at about the same time. He was patronized by King Ravi Varma of Vettattunad and was the teacher of the renowned poet Melpattur Narayana Bhatta

12. Putumana Somaji (AD 1660-1740)

He was born in Sivapuragrama (Trichur). He is well known for his work Karanapaddhati. It is a popular work of advanced mathematics explaining from first principles the methods of deriving various formula and tables which are used for calculations in astronomy. In ten chapters it gives the derivation of the value of  $\pi$ , the sines of angles, and the positions of the planets. C.M Whish<sup>2</sup> has explained the various infinite series given in Karanapaddati for the quadrature of the circle.

13. Sankara Varma of Kattattanat (AD 1800-1838)

Prince Sankara Verma was the brother of King Udayavarma of Karattanat and is also known as Appu Tampuran. His important work is Sadratnama<sup>1</sup> which in six chapters is a comprehensive treatise in five chapters and contains all the results of Kerala mathematical studies. He was patronized by Swati Tirunal Maharaja of Travancore, C. M. Whish knew him well and considered him as very intelligent man and as an acute mathematician.

After Sankara Varma, the mathematical studies faded away gradually in Kerala. This may be due to the western domination of the country. The colonial domination had a degrading effect on all indigenous

studies including mathematics and there was no serious attempt to correlate western mathematical developments with the ancient Kerala methods.

Anticipation of Modern mathematical discoveries

It is interesting to note that some of the significant discoveries of modern mathematics are found anticipated, partly or fully in Kerala. The ancient Kerala astronomers working on the basic principles of algebra, geometry and limiting values produced by dint of acute thinking and logical reasoning and with a certain degree of intuition, produced significant results. A few examples of these anticipations are described below to understand the significance of the works of these scholars of Kerala School of Hindu mathematics.

1. The irrationality of  $\pi$

The irrationality of  $\pi$  was stated by Lambert for the first time in a paper read before the Berlin Accademy in AD 1671. It is interesting to note that nearly two centuries prior to this Nilakantha Somayaji (AD 1444-1545) categoricall stated this in his commentary on Aryabhatiya<sup>1</sup>. His comments on the approximate value of  $\pi$  given in Aryabhatiya as follows,

“കേന മനേന മീയമാനോ വ്യാസോതിര.  
 വയവ; സ്യാത്  
 തേ നൈവ മാനേന മീയമാനേ; പരിധി;  
 പൂനഃ  
 സവയവ ഏവ സ്യാത്”

“By a measure with which the diameter of a circle can be measured without a remainder, the circumference measured by that very measute will certainly leave a remainder”.



(Continued from the previous issue)

# PROPOSALS FOR RESTRUCTURING OF BA/BSc. ENGLISH

D. Ramachandran Nair SD College Alapuzha

## PART I ENGLISH-EXISTING SCHEME

Students of sciences and humanities have very different orientations and interests. Correspondingly, the English component in their courses should be able to address these varied interests. As discourses, sciences and humanities require different registers with different textual items, and the proposed English course contains items that help the development of these. For existing courses, the English component shall remain the same in its time allocations, but may admit other seminal changes. The most essential of changes is the envisaged shift to a more skill-oriented syllabus. The course shall contain three papers with their characteristic aspects as below:

Paper	Year	Syllabus	Evaluation		Work Hrs / Week
			Internal	External	
I	I	Communicative and Functional English			
		a. Grammar		50	2
		b. Speaking skills	15		1
II	I	c. Writing skills	10	25	2
		a. 2 Novels OR 1 Novel/1 short story collection		100	3
		b. A Collection of Biographical sketches			
III	2	a. A collection of essays			2
		b. A collection of poems	50		2
		c. Project work	50		1

(All the text book are for non-detailed study)

## DESCRIPTION OF THE COURSE

### Paper I (For both BA and BSc)

a. Grammar. Parts of Speech, Tenses, Voice, Indirect speech, Prepositions, Articles, Clauses, Sentence patterns

Techniques of Transformation and Generation

b. Speaking skills : Elementary use of audio-visual aids, Reading courses, speech training, listening and comprehension

c. Writing skills : Organization and presentation of ideas, composition, letters and precis writing, Essays English for specific purposes

For b & c, each batch may contain not more than twenty students...

### Paper II (For BSc only)

a. 2 Novels belonging to the science fiction genre, or a novel and a collection of short stories of that genre eg : Jurassic Park; Boys from Brazil — Novel

Vonnegut, Aldiss, Asimov, Ballard, Moorcock, Satyajit Ray, Arthur Clarke- short story

b. Collection of biographical sketches dealing with the lives of major scientists. For example the essays written by C.P. Snow. Jayant Narlikar, Stephen Hawking

Both the texts are for non- detailed study

**Paper II (for B.A. only)**

- a. 2 Novels of a general nature, or a novel and a collection of short stories of a general nature.
- b. A collection of biographical sketches dealing with the lives of great leaders, philosophers, and artists.

Both the texts are for non-detailed study.

**Paper III (For BSc only)**

- a. A collection of essays on popular science, the philosophy of science and the contemporary critique of science. stress should be on essays that deal with the morality and ideology of science in the present day world.
- b. A collection of modern poems that imaginatively talk about scientific gadgets and things made with the assistance of technology or poems that talk minutely about birds, animals, flowers, etc.

Both the texts are for non-detailed study.

- c. Project work- A range of projects from linguistic analysis of language to detailed analysis of scientific journalism, to be presented in a work- paper. The major objective should be to make the students skillful in collecting, arranging and presenting serious material in an academically acceptable manner. Creative projects like a real interface with a living scientist or full journalistic reporting of a major project shall be encouraged. Original creative writing in English language may also be enthusiastically fostered.

**Paper III (For B.A. only)**

- a. A collection of essays on politics, philosophy, art and culture with contemporary relevance. The collection should reflect the late twentieth century critical sensibility pervasive in these disciplines.

b. Same as above.

- c. Project work can have a more historical and / or cultural orientation. Apart from creative writing in English, reportage on historical, artistic, economic, political, or cultural institutions with sound critical assessment may be encouraged.

**Part I English for Inter-disciplinary courses.**

For the new three- main courses to be offered, there may be a reduced English language component with only two papers to be taught in 9 hours per week during the first two years of the degree courses. paper I shall be similar to the one we have already designed for the existing courses, and to be taught in 5 hours per week during the first year. paper II, however may be slightly changed:

**Part II**

	Evaluation		Hours / Week
	Internal	Ext	
a. A collection of essays	75		2
b. Two novels/One novel and a collection of short stories			1
c. Project work	25		1

Paper II may be taught in 4 hours per week during the second year. The description of the units are as given for the existing courses.

**Part III.**

	int	ext	hrs / week
a. collection of essays on popular science, Philosophy of science and critique of science		50	3+2
b. collection of poems			
c. Project work		50	1
Paper I As above			
Paper II Fiction		50	2
Collection of essays			2
Project		50	1

I a. Traditional Grammar  
 Parts of speech. Tenses, Voice, Indirect speech, clauses  
 Sentence Patterns  
 Techniques of transformation and generations

	int	ext	hrs /week
Paper I Communicative English			
a. Grammar and composition	50		2
A list of important topics in Grammar, the usual methods of improving skills of composition- letter, precis, comprehension, etc			
b. Speaking skills			
languages lab facilities	15		1
Reading courses, talks			
c. Writing skills,			
Organization	10	25	2
and presentation of Ideas General Topics and their discussions			
Paper II a. A set of novels for non-detailed study			3
b. A collection of biographies and anecdotes about scientists	100		

### B.A. English Elective- Existing Scheme

The English main course is intended to give the student greater capacity to critically analyse literature written in English. In a changing post colonial scenario, the English option cannot be without its own cultural and political controversies. But, English being the language of much of technological exchange and cultural transactions in the modern world, the student of English becomes important as one equipped with the critical tools and the familiarity with the medium essential for resisting new structures of domination. This also renders it imperative to include materials useful for cultural analysis in the syllabus. We in the departments of English in Indian universities do not seem to have completely

awakened to the fact of the crisis that the very institution of English studies is facing. If the complacency and outward calm are any indication, the impulse to change according to the contingencies of history is yet to be sufficiently incited to insure the survival of the institution. This article intends to chalk out a few strategies in that direction.

### BSc Part I English

English for science students should have more scientific interest in it. Moreover, scientific writing also provides students with words and phrases useful in their respective discourses.

#### Paper II Prose selections.

I. A representative collection of essays on popular science, philosophy of science, critique of science

II A collection of biographical writings mainly on scientists : importance shall be given to writings with a dominant interest in scientific anecdotes.

Paper I Communicative English  
 Grammar, Composition  
 Speaking & Writing skills  
 Organization and presentation of ideas project work

Paper III  
 A set of novels - sci-fi  
 collection of poems written in 20th C

	Marks
Paper 1. Grammar and composition	30
2. speaking skills	20
3. project	50
Paper II Written Examination	100
Paper III Written Examination	100

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[.....contd. from page 16]

2. Leibnitz power series of  $\pi$

The approximation of the value of  $\pi$  as a particular case of the power series for arc tan x was due to Leibnitz in AD 1673 and is given as

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \dots$$

This series was anticipated by Madhava of Sangamagrama (AD 1340-1425), in the following verse attributed to him in Kriyakramakari

“വ്യസേ വരിധിനിഹതേ രൂപഹൃതേ  
 വ്യസാ സാഗരാഭിഹിഹിതേ  
 തൃഷാരാഭി വ്യാസമസഖ്യാ കേതം  
 ഞ്ഞം സ്യാം-ക്രമാത് കൂരിയത്”

“Multiply the diameter by 4. Subtract from it and add to it alternately the quotients obtained by dividing four times the diameter by the odd integers 3, 5 etc.”

3. Gregory's series for the inverse tangent

In modern mathematics the series are  $\tan x = x - \frac{x^3}{3} + \frac{x^5}{5} - \dots$  is

called Gregory's series for the inverse tangent function after the Scottish mathematician James Gregory who knew about it in AD 1670 only. This series was anticipated by Madhava of Sangamagrama (AD 1340-1425) in the following verse<sup>6</sup>.

“ഇഷ്ടജ്യോതിജ്യയോർലാതാത് കോട-  
 യാപ്തം പ്രഥമഫലം.  
 ജ്യോവർഗ ഗുണകം കൃത്വ കോടിവർഗ പ-  
 ഹാരകം  
 പ്രഥമാഭി ഫലേഭ്യോ അഥനേയ ഫലത്തിർ-  
 തൃഹൃഃ  
 ഏക തൃയാഭ്യോജ സംഖ്യാഭിർ കേതം  
 ഏവാതന്വനക്രമാത്”

ഓജാനം സംയുതേസ്യകൃത്വ യുഗ്മയോഗം  
 ധനർഭാവത്”

“The product of the given Sine and the radius divided by the cosine is the first result. From the first results obtain a sequence of results by raking the sequence of the Sine as multiplier and the square of the Cosine as divisor, Divide in order by odd number 1, 3 etc. From the sum of the odd terms, subtract the sum of the even terms. This becomes the arc”.

4. Newtons power series for the Sine and Cosine.

The western mathematician Newton (AD 1642-1727) is credited with the discovery of the power series for Sine and Cosine in about AD 1670 which might be stated as

$$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \dots$$

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \dots$$

These were anticipated by Madhava (AD 1340-1425) as given in the following verse<sup>6</sup>.

“നിഹത്യ ചാപവർഗേണ ചാപം  
 തത്ചാപലാനി ച  
 ഹരതേ സമൂലയുഗ്മവർഗൈസ തൃജ്യാവർഗ-  
 ഹരതേ; ക്രമാത്  
 ചാപം ഫലാനി ചായോ ന്യാസ്യോനപരിപരി  
 ന്യജേത്  
 ജീവാതൈ, സംഗ്രഹോ സൈവ വിഭാർ-  
 ഇത്യോദന കൃതഃ  
 നിഹത്യ ചാപവർഗേണ രൂപം തത്താത്-  
 ഫലാനി ച  
 ഹരതേ വിമൂല യുഗ്മവർഗൈസ  
 തൃജ്യാവർഗാതൈ; ക്രമാത്  
 കിന്ത്യ വ്യാസധലേവൈ ഖിഗ്മനോഭ്യം  
 വിദ്യോജ്യതാം  
 ഫലാനി അധോധാ; ക്രമശോ ന്യാസ്യോ  
 പര്യപുരിത്യജേത്,  
 ശരപ്തൈ സംഗ്രഹോ സൈവ്യ സ്തേന  
 ത്രീ ഭ്യോധിനാകൃതഃ”

"Multiply repeatedly the arc by its square and divide by the square of the even number 2, 4 etc. increased by that number and then multiplied by the square of the radius. Place the arc and the results one below the other and subtract each from what is above it. This is the method to derive the arcs. Multiply repeatedly the unit measurement (which is the radius) by the square of the arc and divide by the square of the even numbers 2, 4 etc decreased by that number and then multiplied by the square of the radius. The first is, however, to be divided by other and subtract each from the one above it. This is the method to derive the Sara-s".

The four examples are given here to show the significance of the works done by the ancient mathematicians of ancient Kerala. The history of Kerala mathematics is a rather neglected subject of study. Scholars of Sanskrit and of mathematics have to come forward to study these texts

(contd. from page 4)

2. Triple Main Courses should be introduced only in the context of a total restructuring and updating of existing courses. To introduce a Triple Main Course before updating an existing traditional course in the same discipline would be to put the cart before the horse. The very novelty of the new courses, irrespective of their usefulness would attract a great majority of students to them, thereby rendering traditional courses totally irrelevant. The experience of S. B. College, Changanacherry which offers a traditional course in B. A, English and a Triple Main Course in 'Communicative English' needs to be studied. While fifteen students have opted for Communicative English, only five

and interpret, in terms of modern methods the theorems postulates and formulae contained in these works.

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6. R. M. Thanpudan and A. R. A. Aiyar Editors, Yukti bhasa, Part-I. Mangaladaya Trichur 1948.

have joined the traditional English course this year. This would possibly have not been the case had the traditional course been updated and restructured before introducing the job-oriented course. The moral: A programme of updating and restructuring an existing traditional course should always precede the introduction of a comparable job-oriented course.

3. The options offered and the combinations suggested appear to be too rigid and inadequate to meet the varied requirements of individual colleges. Obviously there should be more courses to choose from and greater flexibility in identifying combinations. It would be better to list a large number of courses in isolation and allow individual colleges

GOVERNMENT OF KERALA

Abstract

U. G. C. Scheme - Extension of benefits of U. G. C. Scheme/Scale to teachers of Private Colleges regularised after 13-3-90—Further Orders issued.

HIGHER EDUCATION (C) DEPARTMENT

G. O. (Ms) No. 209/96/H. Edn.

Dated, Thiruvananthapuram, 24-12-96

Read: G. O. (Ms) 27/91/H.Edn. dated 14-2-91.

ORDER

In the Government Order read as 1st paper above Government ordered that all the College teachers appointed on permanent posts on regular basis coming under 48% and who were in service as on 1-4-90 will be eligible for salary benefits as per U.G.C. scales with effect from 1-4-90 as and when they complete 8 years of service subject to the condition under U. G. C. Scheme.

2. Government are now pleased to order that teachers who were appointed on temporary vacancies prior to 13-3-90 and who have been regularised against permanent vacancies thereafter can be considered for U. G. C. benefits and that their previous service including broken service can be counted for calculating qualifying service for placement.

3. The G. O. read above stands modified to the above extent.

By Order of the Governor  
J. VIJAYALEKSHMI AMMA.  
(Under Secretary to Govt.)

to choose combinations suitable to them. This would help them accommodate the local social needs and the specific requirements of teachers to be rendered surplus by the proposed delinking of pre-degree courses from colleges.

4. The proposal to introduce the Triple Main Courses from the next academic year itself appears to be a hasty step. The designing of the curriculum and the syllabus is too complex a business to be completed within the next few months. A realistic target would be to introduce the courses from 1998-'99.

5. The syndicate committee's proposal is welcome to the extent that it would initiate a meaningful academic dialogue. However, the syndicate's initiative is likely to be construed as an attempt to usurp the powers of the academic bodies like the Senate, Academic Council and Board of Studies. Such a controversy would draw attention to itself and render the syndicate committee's initiative a self-defeating exercise. It may be recalled that these fears have

been materialised with regard to the proposals of the Kerala University Syndicate committee (Refer 'The Hindu' report dt. 18-12-96)

To facilitate quality improvement and to accommodate staff rendered excess in colleges and University offices the following proposals are offered as part of the package of delinking pre-degree courses and introducing three main system.

1. The U. G. C. stipulation regarding the teacher student ratio in the individual class room (1:30) be implemented in all subjects, including 1st and 2nd languages.

2. The Semester System may be introduced, on an experimental basis, in selected institutions.

3. While ensuring a certain amount of uniformity in standards, the attempt should be to achieve as much diversity as possible in curriculum, choice of subjects and combinations and in testing and evaluation. Let us confront the choice: Diversify or perish.

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അംഗീകൃത വിതരണക്കാർ

കൈനറിക എഞ്ചിനീയറിങ് ലിമിറ്റഡ് – പുന  
കരുണാകരൻ നമ്പ്യാർ റോഡ്, തൃശൂർ  
ഫോൺ , 331589

ഏറ്റവും നൂതന സാങ്കേതികോപകരണങ്ങളോടുകൂടിയ സർവ്വീസ്  
സ്റ്റേഷനും വർക്ക് ഷോപ്പും ഞങ്ങൾക്കുണ്ട്. കൂടാതെ വായ്പാ  
സൗകര്യങ്ങളും ഏർപ്പെടുത്തി തരുന്നു.





ഡോ. കെ. സി. വിജയകുമാർ കോമേഴ്സ് ശില്പശാല ഉദ്ഘാടനം ചെയ്യുന്നു

**ജോൺ. ഇ. എബ്രഹാമിന് ഡോക്ടറേറ്റ്**



കോട്ടയം സി. എം. എസ്. കോളജിലെ ഇംഗ്ലീഷ് വിഭാഗം അധ്യാപകനായ ശ്രീ. ജോൺ ഇ. എബ്രഹാമിന് മഹാത്മാഗാന്ധി സർവകലാശാലയിൽ നിന്നും പി. എച്ച്. ഡി. ബിരുദം ലഭിച്ചു. ഡോ. എൻ. പാർവതീദേവിയുടെ മേൽനോട്ടത്തിൽ ഭാരതീയ ആംഗലേയസാഹിത്യകാരനായ മഞ്ചേരി എസ്. ഇശ്വരനെപ്പറ്റി നടത്തിയ പഠനത്തിനാണ് ഡോക്ടറേറ്റ് ലഭിച്ചത്.

എ. കെ. പി. സി. ടി. എ. യുടെ സജീവ പ്രവർത്തകനായ ജോൺ. ഇ. എബ്രഹാമിന് സംഘടനയുടെ അനുമോദനങ്ങൾ.

**പ്രൊഫ. ജോർജ്ജ് വി. തോമസ് വാഹനഅപകടത്തിൽ മരണമടഞ്ഞു**

സുൽത്താൻബത്തേരി സെൻറ് മേരീസ് കോളേജ് അധ്യാപകനും എ.കെ.പി.സി.ടി.എ. യുടെ സജീവ പ്രവർത്തകനുമായ പ്രൊഫ. ജോർജ്ജ് വി. തോമസ് 9-12-96 ന് ഒരു വാഹനഅപകടത്തിൽ സ്വപുത്രൻ അനീഷിനോടൊപ്പം മരണപ്പെടുകയുണ്ടായി. സംഘടന ആദരാഞ്ജലികൾ അർപ്പിക്കുന്നു.



എ കെ പി സി ടി എ

39-ാം

സംസ്ഥാന സമ്മേളനം

1997 മാർച്ച് 15, 16 ന്

കണ്ണൂരിൽ

