

Original research paper

Constraints Perceived by the Agricultural Scientists in Teaching Undergraduate Students: An Analysis in TNAU

ABSTRACT

Teachers are the ultimate medium of knowledge delivery to students. They connect the students to harness the facilities available at the institution. The teaching staff of agricultural universities uniquely performs multidimensional functions than any other type of educational institutions. Similarly, the nature of work is also unique. Hence, the working environment of the teachers should be analysed periodically to create a conducive working condition. Thus the constraints of the university staff in teaching undergraduate students were documented to improve the effectiveness of teaching. Ex-post-facto research design was employed to document and diagnose the constraints faced by them. The scientists working in the main campus of Tamil Nadu Agricultural University, Coimbatore were considered as the sample for the study and the study was conducted during September 2017 to January 2018. A semi-structured questionnaire was prepared to document the constraints faced by the respondents. The study included 52 university teachers of age range from 34 to 59 comprising of 51.90 percent of male and 48.10 percent of female. The constraints were documented through an open-ended questionnaire to state their difficulty with UG teaching. Wider student-teacher ratio, poor classroom infrastructure, poor maintenance of AV aids, immoral activities of the students, the distracted mind of the students, external intrusion with guest lectures and heterogeneity of the students were identified to be the significant constraints faced by the UG teaching staff. This paper attempts to suggest remedies for the documented constraints.

Keywords: TNAU; Teaching; Constraints; Scientists; Suggestions; Agriculture; Education; Undergraduate degree program; Teachers

1. INTRODUCTION

Agriculture is a potential employment generation sector in India. About 58.00% of the population depends on it for their revenue. Agriculture being a primary sector dealing with raw material production, it supports the other sectors like manufacturing sector and service sector. Many stakeholders like starting from farmers, input dealers, traders, processing companies, government agencies, private firms, NGOs etc., are striving for the sustainable development of agriculture. With the declining population contributing to farming and shrinking resources there is a serious threat to food and nutritional security to the nation. Hence, a technically sound manpower is needed to be built to support the existing farming community and also to take up farming. Agricultural education is the route map to attain a quality manpower trained with the agricultural practices. In India, agricultural education has

Comment [U1]: This title can be reframed as "Constraints Perceived by Agricultural Scientists in Teaching Undergraduate Students in TNAU, India" Please, give full meaning of TNAU in the title.

Comment [U2]: Add the country.

Comment [U3]: U can report this as 52percents.

Comment [U4]: Report this as 48percent. You cannot have 48.1person human being, should be rounded up.

Comment [U5]: Give the full meaning of this first before you are allowed to use the acronym UG.

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20 seen several stages of growth over thousand years. However, no formal education system
21 was reported until the 19th century in agriculture. Later on, the need for formal agricultural
22 research and education system was realized from the 20th century and several initiatives
23 have commenced. Agricultural education and extension have been geared to harness the
24 modern science and technology for higher productivity and production.

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25 Agriculture is an applied science and hence development in the cognitive, psychomotor and
26 affective domain is necessary to achieve quality and effectiveness of people, products and
27 profits through agriculture. The success of education is highly influenced by several
28 elements like the subject, students, teachers, physical environment and teaching. Thus, it is
29 very much clear that the teachers are key facilitators of quality education, which is also
30 recognized in the Sustainable Development Goals (UNESCO, 2015). The declining quality of
31 education has implications on its impact on reducing poverty and fostering social and
32 economic development (UNESCO, 2014; Wedgwood, 2007). In order for education to fulfil
33 its potential in development, it is essential to improve the quality of education at all levels.
34 Teachers play a key role in improving learning and achievements as they are the most
35 crucial agents who can influence education quality in practice (Hattie, 2009). The quality of
36 education depends ultimately on the issues related with the teachers and teaching. Thus the
37 paper attempts to suggest possible constraints faced by the teaching staff of Tamil Nadu
38 Agricultural University to provide a conducive and convenient environment for the effective
39 teaching-learning situation.

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40 2. BACKGROUND STUDIES

41 In under-resourced schools, such as those in Tanzania, considering the lack of textbooks
42 and other learning materials, teachers play an even more important role in providing quality
43 education. Legislation alone is not enough to bring about a change in perspectives, attitudes
44 and practices. Quality education for all can only be realised if contextually relevant and
45 creative ways are explored. Both the schools and the teachers who work in them need to be
46 prepared to embrace the undoubted challenges, which come with the implementation of
47 inclusive education in an emerging economy (Dreyer, 2017).

48 Tait (2009) mentioned that the teachers are passionate about teaching at the tertiary level,
49 but, this is not to say that all tertiary educators look forward to all aspects of the "job." Given
50 the parameters of the end of semester time constraints and the many and varied
51 expectations of an academic (i.e., teaching, research, administration, consultation,
52 community service, and academic leadership), there are certain aspects of an academic's
53 duties that can be considered to be less attractive than others.

54 Choy and Cheah (2009) reported that the teachers also seem to be in conflict with wanting to
55 stimulate critical thinking in their students and needing to complete the stipulated
56 requirements of the course. This is a dilemma because the relevant governing and licensing
57 bodies of these institutions may not be aware of the needs and the time constraints imposed
58 on teachers.

59 Duron et al. (2006) noted that although content delivery is very important in higher
60 education, it often does not encourage active learning of critical thinking among students. It
61 is important to take into consideration the arguments of Horwitz (1989) that a teacher's
62 perceptions were not shared by their students. Their students may actually be looking at the
63 same situation from vastly different perspectives.

64 Tao (2013) found that teacher-pupil ratios are still too high, which makes teaching more
65 difficult. Moreover, there is a lack of trained teachers and training opportunities for teachers
66 and teachers struggle with unsatisfactory working conditions, which can lead to
67 absenteeism, low motivation and low professionalism. Nigicser (2017) recommended that
68 more resources need to be allocated to improving teachers' working conditions and
69 professional environment to eliminate the barriers to teaching according to their own values
70 and the priorities in education policies.

71 A perusal of above research studies indicates the following basic constraints of the scientists
72 offering courses in the agricultural education system. In South India, Tamil Nadu Agricultural
73 University is one of the prime institutions offering agricultural education to students. A
74 systematic study if conducted to analyse the constraints of the teaching faculties would help
75 in proposing appropriate remedial strategies so as to improve the quality educational
76 standards in this university.

77 Hence, with this background, the present study has been conducted with the prime objective
78 to analyse the perceived constraints if the active teaching scientists of TNAU and proposing
79 suitable remedial strategies.

80 3. MATERIALS AND METHODS

81 Tamil Nadu Agricultural University (TNAU) was the first established institution in south India
82 especially for agricultural education at Saidapet, Chennai in 1868. Later it was shifted to
83 Coimbatore in 1906. TNAU serves the farming community through its threefold activities viz.,
84 Teaching, Research and Extension. TNAU is a premier institute offering a variety of courses
85 in agriculture at UG and PG level. It was also confined as the best agricultural university in
86 India during 2014-15. Considering the meritorious facts, TNAU was chosen as the study
87 area. The teachers are the role models for the students. The teachers are the real mentors

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88 and arranging the appropriate teaching-learning situation in line with the students'
89 requirements. The teachers are also actively engaged in designing appropriate curriculum in
90 line with modern developments in science and technology. Moreover in our agricultural
91 education system, in every semester at least one or two courses will be offered by every
92 major department and hence almost every staff members are having a constant touch with
93 the students. Hence the teachers were considered as the respondents for the study.

94 **3.1. Sampling of Respondents**

95 There were totally 26 departments from where courses were offered to the students. There
96 are three categories of teachers' viz., Assistant professors, Associate professors and
97 Professors, offering courses to the students. The assistant professors and associate
98 professors were categorized as junior scientists and professors as senior scientists. The
99 associate professors were promoted very recently during the time of the study and hence
100 they were included under the category of junior scientists. From each department, two
101 respondents (correspondingly, one from junior scientists and senior scientists categories)
102 were selected and thus the total sample was 52 respondents.

103 The university administration has come out with the strong suggestion to involve senior
104 teachers (professors) as course teachers for the UG degree program. Normally a newly
105 appointed staff could elevate to a cadre of the professor after an approximate period of 17
106 years of service. Most of the professors in our university are having more than 20 years of
107 service as on date. So they could provide a vast amount of information pertinent to the
108 educational needs, suggestions on improvement over the present education system,
109 students' skill gap and the required human resource development interventions.

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110 The junior scientists like assistant professors and associate professors are also actively
111 involved as course teachers or course associates in offering the courses. Most of the
112 assistant professors in our university are having experience ranging between 3 to 10 years.
113 These assistant professors are the active teachers handling the undergraduate courses.
114 They could provide comprehensive information about the present learning situation, skill gap
115 analysis required for the human resource development interventions in a meaningful way.

116 **3.2. Data Collection**

117 The ex-post facto research design was employed for this study. Kerlinger (1964) defined ex-
118 post facto research as a research in which the independent variable or variables have
119 already occurred and in which the researcher starts with the observation of a dependent
120 variable or variables. He then studies the independent variables in retrospect for their
121 possible relations to, and effects on, the dependent variable or variables. Survey research

method was adopted for the study. Survey research is a research method involving the use of standardized questionnaires or interviews to collect data about people and their preferences, thoughts, and behaviour in a systematic manner.

A semi-structured questionnaire was developed for data collection purpose. Self-administered questionnaire method was employed for collection of response from the scientists considering their work schedule and convenience. The constraints perceived by the university teachers with respect to handling courses for undergraduate degree program was documented through an open-ended questionnaire and percentage analysis was worked out to quantify the proportion of respondents experiencing each constraint.

4. RESULTS AND DISCUSSION

4.1. Profile of the Respondents

The profile of the respondents was studied based on their age, gender, educational qualification and years of experience. It could be observed that half of the respondents of the samples belonged to the old age category which is followed by middle-aged (44.20 %). Only a meager proportion (05.80 %) of the sample respondents were found to be young aged. There exists almost an equal distribution of male and female scientists. Despite, precisely male respondents of the sample slightly lead ahead with about 51.90 percent, the female proportion was found to be 48.10 percent. Slightly greater than ten percentage of the sample respondents (13.50 %) owned post-doctoral degree and a meager proportion of respondents (03.80 %) were observed with masters' degree in other subjects like M. V. Sc. and M. A. (English).

Variations exist among the sample respondents in their distribution based on the years of working experience in TNAU. About forty percentage of the respondents (38.50 %) were with less than 10 years of experience followed by 36.50 percent with 11 to 20 years of professional experience in TNAU. One-fourth of the sample respondents (25.00 %) were found to possess an experience of more than 20 years in TNAU. The distribution of the respondents based on the profile is listed in Table 1.

Table 1. Distribution of the respondents based on profile (n=52)

S. No.	Category	Number	Percentage (%)
Age			
i.	Young	03	05.80
ii.	Middle	23	44.20
iii.	Old	26	50.00
	Total	52	100
Gender			
i.	Male	27	51.90
ii.	Female	25	48.10

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S. No.	Category	Number	Percentage (%)
	Total	52	100
Educational Qualification			
i.	Others	02	03.80
ii.	Ph. D.	43	82.70
iii.	PDF	07	13.50
	Total	52	100
Working Experience			
i.	Less than 10 Years	20	38.50
ii.	11 to 20 Years	19	36.50
iii.	More than 20 Years	13	25.00
iv.	No Experience	0	00.00
	Total	52	100

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150 4.2. Perceived Constraints of Respondents

151 The constraints perceived by the university teachers with respect to handling courses for
 152 undergraduate degree program was also documented through an open-ended
 153 questionnaire. The documented constraints were categorized into five groups as mentioned
 154 in Table 2.

155 **Table 2. Constraints faced by the respondents in UG teaching (n=52)**

S. No.	Constraints	Number	Percentage (%)
a.	Problems with respect to Students		
i.	Lack of self-discipline and higher level of immoral activities	04	07.69
ii.	Misconception due to wrong guidance from seniors and wrong role models	01	01.92
iii.	Lack of self-interest in learning	03	05.77
iv.	Higher distraction during class hours	01	01.92
v.	Communication gap among students	01	01.92
vi.	Lack of reading habits	01	01.92
vii.	Increased rate of malpractices	01	01.92
b.	Constraints pertinent to Infrastructure and Supporting Facilities		
i.	Poor class room infrastructure	08	15.38
ii.	Poor maintenance of AV aids	08	15.38
iii.	Inadequate and non-functioning instruments in laboratories	03	05.77
iv.	Lack of modern AV facilities in labs and class rooms	01	01.92
v.	Inadequate / insufficient internet connectivity	02	03.85
vi.	Inadequate / improper functioning of computers in computer lab	02	03.85
vii.	Inadequate transport facilities for field visits	02	03.85
c.	System Constraints		
i.	Wider student-teacher ratio	22	42.31
ii.	Unable to maintain balance between teaching role and administrative roles	04	07.69
iii.	Untimely intrusion of class hours with frequent guest lectures	03	05.77
iv.	Difficulty to meet the educational needs of	03	05.77

S. No.	Constraints	Number	Percentage (%)
	heterogeneously abled students		
v.	Replacement of traditional teaching methods with ICT based teaching	02	03.85
vi.	Manual attendance monitoring is time consuming	01	01.92
vii.	Organizing club activities in 8 th semester	01	01.92
viii.	More courses allotted to a single staff	02	03.85
ix.	Inadequate teaching assistants or lab assistants to support teaching staff during practical sessions	02	03.85
d.	Time-related Constraints		
i.	Time shortage to handle social science practical session	03	05.77
ii.	Too many courses for students per semester	01	01.92
iii.	No time to think ahead for future progress	01	01.92
iv.	Preparation of manuals, lecture handouts and power points consume more time / laborious	01	01.92
v.	Rushing vast portions in short period	01	01.92
e.	Teacher-Centered Constraints		
i.	Weak student-teacher relationship	03	05.77
ii.	Lack of stress relieving mechanism	01	01.92
iii.	Lack of motivating or encouraging mechanism for teachers	01	01.92
iv.	Less scope for teachers to get access to updated technologies	01	01.92
v.	Introduction of new examination pattern or system	01	01.92
vi.	Less choice of interest in work	01	01.92
vii.	Tedious evaluation system and grading	01	01.92
viii.	Lesser scope for personal growth and development	01	01.92

156 * - Multiple responses

157 4.2.1. Students-related constraints

158 Table 2 reveals that 07.69 percent of the respondents faced constraints due to lack of self-
 159 discipline and the higher level of immoral activities of the students. A meager proportion of
 160 respondents felt that handling uninterested students, activities of students misguided by
 161 wrong role models and guidance of seniors, high level of distraction created during class
 162 hours, existence of communication gap within students, between students and teachers, lack
 163 of book reading habits of students and increased malpractices in examinations, preparing
 164 and submitting assignments and record as their prime constraints.

165 4.2.2. Infrastructure-related constraints

166 With regard to the infrastructure related constraints, a similar proportion of respondents
 167 (15.38 %) pointed out poor classroom infrastructure and poor maintenance of Audio-Visual
 168 aids as their prominent constraints. A small percentage of the respondents (05.77 %)
 169 mentioned about the inadequate and non-functioning instruments in laboratories. A scrumpy
 170 percentage of the respondents reported the constraints like inadequate / insufficient internet
 171 connectivity in the campus, inadequate / improper functioning of computers in the computer

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172 lab and inadequate transport facilities for field visits, lack of modern AV facilities in labs and
173 classrooms.

174 4.2.3. System-related constraints

175 Little more than forty percentage of the respondents (42.31 %) added that the main
176 constraints faced by them were the wider student-teacher ratio. Roughly eight percent of the
177 respondents (07.69 %) disclosed that they couldn't able to balance between teaching role
178 and administrative roles. A small percentage of the respondents (05.77 %) commented that
179 it was discomforting to have untimely and frequent guest lectures' intruding the class hours
180 and they have also added that they couldn't able to meet the educational needs of
181 heterogeneously abled students. A trifling proportion of respondents (03.85 %) emphasized
182 that they experienced constraints like replacement of traditional teaching methods with ICT
183 based teaching, allocation of more number of courses to single staff and inadequacy of
184 teaching assistants or lab assistants to support UG teaching during practical sessions. A
185 paltry percentage of respondents (01.92 %) conveyed that a series of the club, college and
186 hostel functions being organized during the final semester as prime constraints hampering
187 their UG teaching efforts.

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188 4.2.4. Time-related constraints

189 The major time related constraint depicted by the respondents was shortage of time to
190 conduct or handle practical sessions for social science courses (05.77 %) followed by a
191 meager percentage of respondents (01.92 %) delineating constraints like too much of
192 courses pressurizing students and restraining them from concentrating in education and
193 classes, lack of time for the staff themselves to think ahead for future progress, time
194 consuming and laborious process of preparing separate literature for manuals, lecture
195 handouts and power points and the situation to rush a vast portion of subject in short period.

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196 4.2.5. Teacher centered constraints

197 Among the constraints that affects the self development and performance of the teachers a
198 trifling percentage of respondents (01.92 %) uttered constraints like, lack of stress relieving
199 mechanism, lack of motivating or encouraging mechanism for teachers, lesser scope to get
200 access to updated technologies, exposure to new examination pattern, lack of choice of
201 interest pertaining to work, tedious evaluation and grading system and lesser scope for
202 personal growth and development. Just about six percentage of the respondents (05.77 %) |
203 presented the weak student-teacher relationship as a constraint in teaching UG courses.

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204

4.3. Suggestions to Solve the Perceived Constraints of the Respondents

After a rigorous analysis of the table 2, it could be clearly observed that unbalanced student-teacher ratio, poor classroom infrastructure, poor maintenance of Audio-Visual aids, immoral activities of the students, distracted mind of the students, external intrusion with guest lectures and heterogeneity of the students were identified to be the significant constraints faced by the UG teaching staff. Several difficulties like lack of funds, other resource constraints and allocation of teachers towards other multifold activities of the university caused a wider gap in the student-teacher ratio and inadequacy of resources like classroom facilities, labs, transport, lesser adoption of motivation techniques etc.

The necessary mechanism should be adopted to narrow down the above-stated constraints. More teaching assistants could be employed to reduce and assist with the difficulties arising out of shortage of teachers. In turn, this would eliminate the constraints like pressure on staff with additional courses, evaluation process and role conflict between academic and administrative activities. A regular time could be allotted exclusively for guest lectures at a stipulated time interval like one per month so as to manage this issue. Ward counseling system should be strengthened to achieve a good student-teacher relationship. Classrooms could be redesigned in such a way to accommodate the AV modern technologies and to minimize the distraction level of students.

A lab assistant exclusive for practical sessions could be employed to assist the staff. A regular stress relieving session could be provided for the teachers. Frequent workshops or seminars or discussion or brainstorming sessions could be conducted within the department and inter-department to get the wider scope of access to updated technologies which paves way for greater personal growth and development. Biometric authentication system could be installed in classrooms to avoid drudgery and time shortage especially in theory classes when a huge group of students has to be addressed individually for attendance. Similarly the teachers could be exposed to training with new gadgets and technologies based on need and voluntarism.

Many scientists stated that they are distracted by frequent guest lecturers arranged by the university administration. Even though it is an appreciable fact that the university administration is taking up such noble efforts of arranging periodic guest lecturers involving eminent personalities in agriculture, the appropriate mechanism should be worked out to schedule these guest lectures. Moreover here most of the guest lectures are arranged in the convenient time of the experts / eminent personalities and hence the administration can't allocate a fixed weekly time slot to accommodate such guest lectures. Hence the year

239 coordinators should take formal initiatives to find out the missing classes and arrange to
240 prepare / work out a compensating time schedule to manage this issue.

241 Further, most of the scientists felt that all the college, club and hostel level functions are
242 organized in the eighth semester itself and the above days are also treated as working days.
243 Hence, most of the scientists felt that this as a major issue to cover up the entire syllabus.
244 Hence the above functions and related celebrations may be distributed in different
245 semesters without affecting the students under RAWA and All India Study Tour. It is also
246 suggested to conduct the inaugural functions pertinent to students club and other students'
247 club societies in the odd semester and its related activities may be distributed in both odd
248 and even semesters. The valedictory functions may be scheduled at the end of the even
249 semester.

250 5. CONCLUSION

251 Education is the keystone for the successful development of oneself and the society. Hence
252 a quality agricultural education should be ensured to develop a quality and skilled manpower
253 to serve farming. As teachers are the prime medium for knowledge dissemination in any
254 educational system, the needs and constraints of the teachers should be addressed to attain
255 the quality education. A heterogenous condition was observed among the sample
256 respondents with respect to the profile. The paper revealed a diversified need of the
257 teachers with respect to the system, students, self, physical facilities and time. Technology
258 could be applied in classroom setup to support and complement teaching at the same time
259 to reduce drudgery of teachers in teaching. Hence necessary and adequate support could
260 be provided based on regular monitoring and evaluation of existing systems.

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