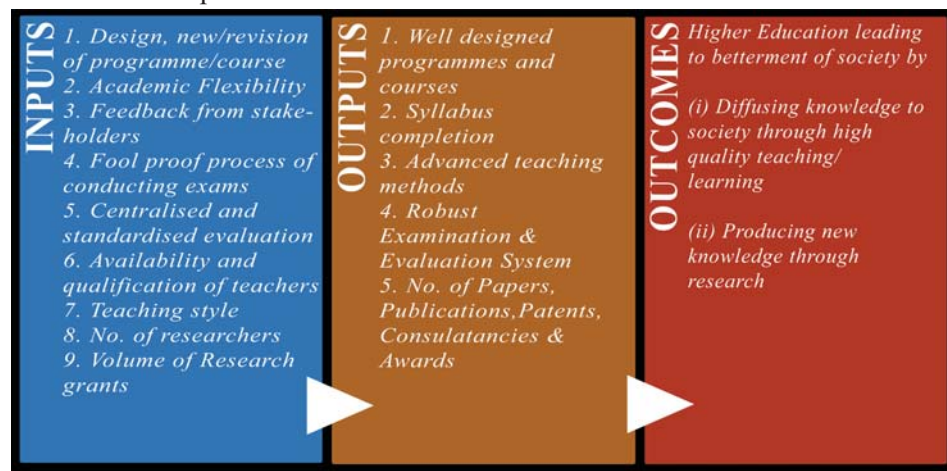


Chapter 3 Quality of Higher Education

Audit Objective 2: *Whether the Higher Education system led to betterment of society by ensuring high quality teaching-learning and research in higher educational institutions*

The expectations of Society from Higher Education can be largely met if the system of Higher Education diffuse knowledge to society through High Quality Teaching/ Learning and produce new knowledge through research as shown in the representation below:



3.1 Betterment of society by imparting knowledge through effective curriculum and teaching-learning processes

In this section, aspects related to curriculum, teaching and testing have been discussed.

3.1.1 Curriculum Design, Development and Implementation

Curricular aspects are the mainstay of any educational institution and include curriculum design, development, enrichment, planning and implementation. A university has the mandate to visualise appropriate curricula for particular programs, revise/update them periodically, ensure that the outcomes of its programs are defined by its councils/bodies. An affiliated college, on the other hand, is essentially a teaching unit and its engagement with curricular aspects is mainly in their implementation. An affiliated college depends largely on a university for legitimising its academic and administrative processes.

3.1.1.1 Process of curriculum designing and development

Curriculum design and development is a complex process of developing appropriate need-based inputs in consultation with expert groups, based on the feedback from stakeholders. This results in the development of relevant higher

education programs¹ with flexibility to suit the professional and personal needs of the students.

The Academic Council is the highest decision making body of a university for curriculum design and development which defines the broad curriculum structure. The Board of Studies (BoS) for each department prescribes the detailed syllabus which in turn is again considered and approved by the Academic Council. The faculty consisting of the senior teachers carry out need assessment and suggest new courses and curriculum. Besides, there is statutory Regulation Amending Committee in the university which frames regulations for all courses.

A. Curriculum Design and Development

The audit findings related to curriculum design and development in the two test checked universities are as follows:

Utkal University

As per the Self Study Report (SSR)² of the University, it had adopted all guidelines issued by UGC for developing the curricula and the course contents of various programs matched the model curriculum developed by UGC. In this regard, Audit sought information from all departments of the University, but responses were received from only five³, out of a total of 27 departments. On the basis of this sample check, it was seen that curricula in these department was developed as per UGC guidelines.

North Odisha University

As per the Self Study Report of North Odisha University, the curriculum for all the courses were designed and developed by BoS as per UGC guidelines.

B. Stakeholders' feedback for revising curricular content

The curriculum designing needs to involve stakeholders and obtain feedback from them. Audit findings related to participation of stakeholders in curriculum designing in these two Universities are as follows:

Utkal University

In case of Utkal, Audit received information from five departments, of which four departments stated that they had taken stakeholder's feedbacks at the time of designing curricula. However, in contradiction to the information furnished by these four departments, scrutiny of the minutes of Board of Studies (BoS) revealed that, no feedback was obtained from stakeholders.

Further, from the Annual Quality Assurance Report (AQAR) sent to NAAC every year by the University also mentioned that the feedback was taken from the stakeholders before designing /revising the curriculum but no records were found by Audit to support this claim.

¹ As per NAAC these programs offer a range of learning experiences to students in a formal manner over a period of one-to-four years leading to certificates/ diplomas/ degrees *i.e.*, BA (Economics), B.Sc. (Physics)

² Self-Study Report is the self-assessment report of the HEI which is to be sent to NAAC for its assessment before accreditation

³ Public Administration, Law, Botany, Political Science and History

North Odisha University

In case of North Odisha University, Audit observed that the University had adhered to the NAAC recommendation to obtain and incorporate stakeholders' feedback during curriculum designing.

The Government stated (September 2020) that non-submission of evidence by the test checked universities in support of their claim regarding incorporation of stakeholders' feedback was not desirable.

3.1.1.2 Revision of Syllabus

Twelfth FYP in paragraph 4.3 envisages that the curricula be revised at least once in every three years and the syllabi be made relevant in tune with job market. Further, NAAC in its accreditation process considers regularity and periodicity of syllabus revision as a key criterion for accreditation. This criterion was evaluated against the outcome indicator of *percentage of programs where syllabus revision was carried out during 2014-19 (Sl. No. 3 of Appendix 1)*.

Audit findings based on scrutiny of information provided by two test checked universities are as follows:

Utkal University

The University had last revised the syllabus of all its Post Graduate (PG) courses during 2013-14 at the time of the introduction of the Choice Based Credit System (CBCS). Accordingly, based on the three-year timeline stipulated by UGC, the syllabi were next due for revision in 2016-17. Audit test checked syllabi of 11 out of 29 PG courses in the University for the period 2015-19⁴. It was noticed that the syllabus was revised for only three PG courses (Economics, History and English) out of the 11 test-checked courses. The syllabi of the remaining eight courses remained unchanged during the last six years.

In the test-checked colleges under Utkal University, after the introduction of CBCS in 2016-17, the syllabus of all the Under Graduate (UG) courses was revised during the same year, in line with UGC guidelines. These syllabi were next due for revision during 2019-20 and it was noted that a common syllabus for all UG courses across the State was implemented by the DHE during the same year.

On being pointed out by Audit, the University accepted that guidelines for the revision of syllabus every three years were not followed in case of PG courses and all the courses were not revised timely.

North Odisha University

The University had revised syllabi of all the 13 PG courses in the year 2012-13 at the time of introduction of CBCS and were due for next revision after a three year period. Audit test checked seven⁵ out of 13 courses and noted that timely revisions did not take place and the syllabus of these courses remained unchanged during 2013-19.

⁴ Data for 2014-15 was not made available to Audit

⁵ Biotechnology, Botany, Physics, Chemistry, Zoology, Economics and MCA

The syllabi of all the UG courses in the test-checked colleges of North Odisha University were revised in 2016-17 at the time of introduction of CBCS and were due for next revision after a three year period. As mentioned earlier, a common syllabus for all UG courses across the State was implemented by the DHE during 2019-20.

During accreditation of universities, NAAC awarded maximum scores to the institutions where 50 *per cent* and above syllabus were revised. Due to the fact that timely revision of syllabus had not taken place, both the Universities were not eligible to score maximum marks under this criterion.

Besides this, failure to revise course curriculum of PG courses by Utkal University and North Odisha University, deprived the students of latest relevant course material in tune with job market dynamics as well as advances in research and development.

3.1.1.3 Courses having focus on employability/ entrepreneurship

NAAC states that curriculum designed by Universities/Colleges may also focus on employability, entrepreneurship and skill development. On the same lines NAAC, in its accreditation and assessment process, gives due weightage to employability, entrepreneurship and skill development focus in the design of curriculum by universities. This criterion was evaluated against the outcome indicator of *average percentage of courses having focus on Employability/ Entrepreneurship/ Skill during 2014-19 (Sl. No. 4 of Appendix 1)*.

A comparison of the courses considered as employable/entrepreneurial by the two universities shows that there are no clear cut criteria for categorising courses as such. While Utkal University has stated that 100 *per cent* of its courses are employable, North Odisha University on the other hand, has categorised only 27 *per cent* of its courses as having focus on employability/ entrepreneurship. Audit noted that there was no uniformity in the courses being categorised as employable or entrepreneurial. For example, while North Odisha University had not considered eight courses like Botany, Chemistry, Economics, Sanskrit, *etc.*, under this category, all these were considered as employable by Utkal. In the absence of any clear criteria or supporting evidence for this, the actual employability of courses in the Universities, could not be evaluated.

During accreditation of universities, NAAC awarded maximum scores to the institutions where 50 *per cent* and above courses were having focus on employability. While North Odisha University clearly falls below this benchmark, the veracity of the percentage figure of Utkal University is doubtful in the absence of any supporting evidence and clear cut criteria.

Thus, the contribution of these two universities towards providing high quality education with a focus on courses that would ultimately lead to employability/entrepreneurship and skill development remains uncertain.

3.1.1.4 Number of value-added courses and students enrolled

Value added courses and activities are those which may not be directly linked with one's discipline of study but contribute to sensitising students to cross cutting issues such as gender, environment and sustainability, human values

and professional ethics. These courses⁶ include Applied Sociology, Fashion Designing, Television and Video Production, Refrigeration, Hospital Waste Disposal Management, *etc.* Further, as per NAAC manual, value added courses are optional, offered outside the curriculum and help the students in getting placement.

To assess the efforts made by test checked universities in offering value-added courses, *the number of value-added courses imparting transferable and life skills during 2014-19 was used as an indicator (Sl. No. 3 of Appendix 2).* This indicator is also one of the key indicators used by NAAC during assessment and accreditation process of higher educational institutions.

Also, in order to assess the efforts made by test checked universities in encouraging students to enroll for value added courses, outcome indicator, *average percentage of students enrolled in value added courses during 2014-19, was evaluated (Sl. No. 5 of Appendix 1).*

Audit scrutiny regarding the number of value-added courses imparting ‘transferable and life skill’ by Utkal University and North Odisha University revealed that none of these HEIs had introduced any such course. Consequently, there was no record of any student being enrolled in such courses during 2014-19 in the two Universities.

Out of 32 test checked colleges, only one college (V.N. Autonomous College) was sanctioned ₹ 7 lakh in 2014, (released amount ₹6.30 lakh) by UGC for the introduction of a value-added course⁷. However, the college did not spend any amount for starting this course till date (January 2020). Therefore, during 2014-19, none of the 32 test checked colleges had incorporated value-added courses in their course content.

None of the test-checked HEIs, had any value-added courses imparting “transferable and life skill”, thus depriving students of the opportunity to learn about interdisciplinary and crucial issues such as gender, human values, professional ethics, *etc.* Besides this, NAAC awarded maximum grade points to HEIs for the introduction of value-added courses. However, as per this benchmark, both Utkal University, North Odisha University and the 32 test-checked colleges failed to be eligible against this criterion.

In reply (September 2020), the DHE stated that Environmental Science/Studies is a value-added course which has been included as a compulsory subject at UG level in all streams since last 12 years.

The reply is not acceptable as Environmental Science/Studies is a subject which is taught as compulsory paper under UG courses but does not fall under the parameters of a value added course as defined by NAAC. NAAC clearly states that value added courses are optional courses, offered outside the curriculum and help students in getting placements. Therefore, constructive steps need to be taken by the State Government and the HEIs of Odisha to introduce such courses at UG and PG levels.

⁶ UGC Guidelines for Introduction of Career Oriented Courses in Universities and Colleges during 11th Five Year Plan (2007-2012)

⁷ Rural Entrepreneurship Development

3.1.1.5 Students undertaking internships

Internships are designated activities that involve working in an organisation under the guidance of an identified mentor. The aim is to make the students capable of applying their knowledge and skills in different settings and inculcating professional dispositions and ethics.

To assess students undertaking field projects /internships in the test checked universities and colleges, *the percentage of students undertaking internships during 2018-19 was used as an indicator (Sl. No. 4 of Appendix 2)*. This indicator is also one of the key indicators used by NAAC during the assessment and accreditation process of HEIs.

The details of number of students who availed internships during the period 2014 to 2019 at the two test checked Universities are stated in table below:

Table: 3.1 Details of students undergone Internship at Utkal University and North Odisha University during 2014-15 to 2018-19

Year	Utkal University			North Odisha University		
	Students enrolled	Number of students taken internship	Percentage	Students enrolled	Number of students taken internship	Percentage
2014-15	2195	122	5.56	404	3	0.74
2015-16	2197	128	5.83	515	0	0.00
2016-17	2114	122	5.77	505	1	0.20
2017-18	2258	131	5.80	495	0	0.00
2018-19	2293	134	5.84	780	9	1.15
<i>Average percentage</i>			<i>5.76</i>			<i>0.42</i>

(Source: Data furnished by Utkal University and North Odisha University)

As seen from the table above, out of the total number of students enrolled in both the Universities, only a minimal number, *i.e.*, 5.76 per cent in Utkal University and 0.42 per cent in North Odisha University undertook field projects/internships. Also, it was noticed that the students who undertook field projects/internships in Utkal University during 2014-19, were restricted to only seven departments⁸ of the University. Similarly, all the students who worked as interns or in field projects during 2014-19, belonged to a single department⁹ in North Odisha University.

None of the students of the 32 test checked colleges of Utkal University and North Odisha University had undertaken any internship during 2014-19.

Audit findings highlight the fact that both the universities had not made any efforts to expose their students to practical learning through field projects, summer internships, *etc.*, affecting the achievement of the desired outcome of employability of students.

During accreditation of universities, NAAC awarded maximum grade points to the institutions where 10 per cent and above students had undergone

⁸ Geography, Botany, Environment Science, Applied Microbiology, Geology, Personal Management and Industrial Relations, Library and Information Science

⁹ Master in Computer Application

internship during the year. However, with the meager percentages, none of the test-checked HEIs in the State were eligible to meet this benchmark.

3.1.1.6 Academic flexibility

Academic flexibility denotes the choices made available to the students in the curriculum offerings and the curriculum transactions. It refers to the freedom in the use of the timeframe of the courses, horizontal mobility, inter-disciplinary options and others facilitated by curricular transactions. There are a number of ways through which academic flexibility can be incorporated. It includes offering new and relevant courses, introducing CBCS and semester systems, etc.

In order to assess the efforts made by test checked universities in providing employability through introduction of new courses in the programs, the outcome indicator, *Percentage of new courses introduced out of the total number of courses across all programs offered during 2014-19 (Sl. No. 6 of Appendix 1)*, was evaluated.

(A) Introduction of new courses

The percentage of new courses introduced out of the total number of PG courses across all programs offered in the two test checked universities during the last five years are as follows:

Table 3.2: Number of new courses introduced during 2014-19

Name of the University	Total number of PG courses during 2014-19	New PG courses introduced during 2014-19	Percentage of new courses
Utkal University	29	2	7
North Odisha University	13	6	46

(Source: Data furnished by Utkal University & North Odisha University)

It was observed that only two new courses were introduced in Utkal University. However, North Odisha University performed better with introduction of six new courses during 2014-19.

During accreditation of universities, NAAC awarded maximum grade points to the institutions where, 10 per cent and above new courses have been introduced. As seen from the table above, clearly, more efforts need to be made by Utkal University to introduce new courses and improve their performance against this benchmark. Further, the introduction of sufficient number of new courses, especially value added ones that impart skills, would also impact the outcome of employability of students in these higher educational institutions.

(B) Programs having Choice Based Credit System

As per UGC, CBCS not only offers opportunities and avenues to learn core subjects but also to explore additional avenues of learning beyond the core subjects. CBCS allows students to choose inter-disciplinary, intra-disciplinary courses, skill oriented papers and provides more flexibility for students.

Further, UGC has prescribed a minimum course curriculum for undergraduate courses under CBCS and guidelines for implementing a Semester System in

higher educational institutions. UGC reiterated (April 2018) its guidelines to implement CBCS in universities and also to revise curriculum.

To assess the efforts made by test checked universities in introducing CBCS as part of the curriculum, *the percentage of programs having CBCS during 2018-19 was used as an indicator (Sl. No. 5 of Appendix 2)*. This indicator is also one of the key indicators used by NAAC during assessment and accreditation process of higher educational institutions.

Scrutiny of information provided by the test-check HEIs revealed that all of them, *i.e.*, Utkal University, North Odisha University and 32 test-checked colleges had introduced CBCS, thus fully complying with the UGC guidelines.

Utkal University had introduced the CBCS in 2013-14 at the University level. In the test-checked 24 colleges under the University, CBCS was introduced in 2016-17.

In North Odisha University, CBCS was introduced in 2012-13 at the university level and in 2016-17 in the test-checked colleges under North Odisha University.

Thus, both the Utkal University and North Odisha University and the 32 test-checked colleges were eligible to score maximum grade points on this parameter during the NAAC accreditation.

(C) Programs having Semester System

A semester system is an academic term that divides an academic year into two terms or parts. It provides an opportunity to the students for continuous learning, assessment and feedback. It facilitates a better understanding of the subject. Further, paragraph 2.2.3 (c) of Report of Inclusive and Qualitative Expansion of Higher Education issued under Twelfth FYP considered introduction of semester system for academic flexibility as a quality enhancing measure for excellence in higher education.

In both Utkal University and North Odisha University, and the 32 test-checked colleges, the semester system was implemented along with the introduction of the CBCS in the respective years as mentioned in the Paragraph above.

Summing up and recommendations

Effective Learning Processes

Obtaining feedback of stakeholders and inputs of experts is a very crucial process in curriculum designing. However, Utkal University did not solicit the same in revising its curricula. In 18 out of 42 PG subjects test-checked, syllabi of 15 subjects were not revised, though due for revision.

In North Odisha University, only four out of 13 courses had focus on employability and no value-added course was introduced in any of the test-checked HEIs.

In Utkal and North Odisha Universities, students of only seven and one departments respectively had been sent for internship. Thus, focus on internship was not adequate.

Recommendations:

- The syllabus of all the courses in both the universities may be revised every three years as per UGC guidelines and efforts may be made to obtain inputs from concerned stakeholders while undertaking course revision.
- New value added courses having focus on employability and entrepreneurship may be introduced to enable the students to be more marketable and competitive in the modern world.
- HEIs may liaison more closely with corporate entities, local industry especially *via* their Alumni Associations, to provide more opportunities for field projects to the students and explore possibilities of summer internships.

3.1.2 Effective Teaching Process

In this section, aspects that are closely connected to advanced teaching methods such as Information and Communication Technology (ICT), Learning Management Systems (LMS), e-resources, faculty related aspects, examinations systems, *etc.*, have been discussed.

3.1.2.1 Use of Information and Communication Technology in teaching

NAAC Manual for Universities, defining the role of ICT, states that technological advancement and innovations in educational transactions have to be undertaken by all HEIs to make a visible impact on academic development as well as administration. Traditional methods of delivering higher education have become less motivating to a large number of students.

NAAC during assessment and accreditation process of HEIs used the following indicator: ***Percentage of teachers using ICT for effective teaching with Learning Management Systems (LMS), E-learning resources, etc., during 2018-19 (Sl. No. 7 of Appendix 1).***

The details of the number of ICT enabled classrooms and teachers using ICT tools in the test checked universities and colleges, as made available by the sample checked universities/ colleges are depicted in the following table.

Table 3.3: Statement showing number of ICT enabled classrooms and teachers using ICT tools in test-checked HEIs during 2018-19

Name of the University	Total number of classrooms	ICT enabled classrooms	Percentage	Total number of teachers	Total number of teachers using ICT tools	Percentage
Utkal University	103	60	58	144	118	82
Test checked colleges (24)	401	46	11	673	108	16
North Odisha University	45	20	45	44	31	70
Test checked colleges (8)	103	8	8	132	10	8

(Source: Data furnished by Utkal University, North Odisha University and test checked colleges)

As seen from the table above, while more than half the classrooms in Utkal University are ICT enabled, in case of North Odisha University, this number falls to 45 *per cent* only. In both the Universities, a substantial number of teachers are using ICT tools for teaching.

In comparison, the test-checked colleges fared very poorly in ICT enabled infrastructure as well as teaching. Only 11 and eight *per cent* of them have ICT enabled classrooms under Utkal University and North Odisha University respectively. Similarly, the number of teachers using ICT to teach in these test-checked colleges was also minimal at 16 *per cent* and eight *per cent* in Utkal University and North Odisha University respectively. The limited use of ICT tools in teaching methodology of these colleges, directly impinges on the quality of education being imparted in these HEIs, besides denying students, familiarity with ICT tools.

During accreditation of universities, NAAC awarded maximum scores to the institutions where 80 *per cent* and above teachers use ICT tools in teaching. While Utkal University was eligible for maximum marks based on this criterion, there is scope for further improvement in case of North Odisha University. As regards, test-checked colleges, substantial, constructive efforts need to be undertaken to provide an ICT enabled learning environment to the students.

(A) *Failure of Virtual Tutorial Project at Utkal University*

Rashtriya Uchchar Shiksha Abhiyan (RUSA), is a Centrally Sponsored Scheme, launched in 2013 and aims at providing strategic funding to eligible higher educational institutions throughout the country for infrastructure development in colleges.

An amount of ₹ 5 crore was sanctioned to Utkal University (released amount: ₹3.75 crore) under the Equity Initiative Program of RUSA, in the year 2015-16. The aim of the program was to provide educational access in remote areas of Odisha and supplement classroom which suffers from the handicap of shortage of teachers. Further, this also aimed to provide audio and video demonstration of concepts in virtual tutorial mode by expert teachers and animation software, with bilingual support (Odia and English).

Utkal University entrusted the execution of this program to its constituent college, DDCE. Under this program, (i) a studio was to be constructed to record the teaching classes by expert teachers, (ii) tablets were to be distributed to 1,000 under graduate students each from five universities. The number of such tablets to be procured and distributed was subsequently (January 2019) changed to 2,000.

Audit noticed that even after four years, although the studio was established, tablet procurement could not be initiated (January 2020) for distribution to students. DDCE, which was entrusted with the task, did not take necessary steps in this direction. Of the total amount of ₹3.75 crore released to Utkal University, only ₹2.03 crore could be utilised (January 2020).

Thus, the objective of the Equity Initiative Program could not be achieved due to non-procurement and non-distribution of end point devices to the targeted

beneficiaries. Hence, the benefits of educational access as well as usage of ICT tools could not materialise for students of remote areas of the State.

3.1.2.2 Availability and quality of Faculty

Paragraph 7.1.2 of Report on ‘Inclusive and Qualitative Expansion of Higher Education’ issued under the Twelfth FYP by GoI stated that shortage of quality faculty coupled with lack of faculty mobility across regions is a major constraint in the development of Indian higher education system. As per NAAC, aspects that determine quality of faculty/teacher include qualification of teachers, professional development of teachers, availability of faculty, etc.

A. Availability of teachers

(i) Vacancy in teaching staff

As per RUSA guidelines, 85 per cent of faculty positions with respect to the sanctioned strength, should be filled. In this regard, the vacancy position of teachers at the two test checked Universities and 31 test checked colleges (data of one college not furnished to Audit¹⁰) are stated in table below:

Table 3.4: Availability of teaching staff in test checked Universities and colleges during 2018-19

Year	HEIs	Sanctioned strength of teachers	Working strength of teachers	Vacant post of teachers	Percentage of vacant post
2018-19	Utkal University	232	144	88	38
	North Odisha University	67	44	23	34
	Test checked colleges (31)	918	657	261	28

(Source: Data furnished by Utkal University, North Odisha University and 31 test checked colleges)

From the above table it is seen that as of 2018-19 in Utkal University, against a sanctioned strength of 232 teachers, there were only 144 men-in-position, leading to a vacancy of 38 per cent. Audit scrutiny revealed that in eight¹¹ departments there were persistent vacancies since 2014-15. In Utkal University, no recruitment was made in the last three years, i.e., since 2016-17.

In case of North Odisha University, as of 2018-19, against a sanctioned strength of 67 teachers, there were 44 men-in-position thus, leading to a 34 per cent vacancy. In three¹² departments, there were persistent vacancies since 2014-15. It was also noted that even though six¹³ new departments were opened in 2017-18 and 2018-19 but the recruitment of teachers was not commensurate with the requirement of these new departments. It was noted that in case of both Geology and Material Science departments, not a single faculty was recruited as of December 2019 and these departments were being managed by guest faculties.

¹⁰ Surajmal Saha College, Puri

¹¹ Botany, Business Administration, Geography, Mathematics, Psychology, Sociology, Zoology, Law

¹² Physics, Chemistry, Computer Application

¹³ English, Sanskrit, Odia, Santhali, Geology, Material Science

In 31 test-checked colleges (data of one college was not furnished to Audit), the position was slightly better with a 28 *per cent* vacancy in 2018-19.

The Government did not ensure availability of regular faculty in the HEIs in the State which impacts both the quality of education imparted and the desired outcomes of employability and progression to higher education. Further, as observed above, the vacancies in the two Universities were persistent over years, creating a shortage of teachers in the respective departments.

(ii) Stream-wise Student Teacher Ratio at test checked universities and colleges

To assess the efforts made by the State Government and by HEIs in ensuring an adequate number of teachers, *the availability of teachers as per the prescribed Student Teacher Ratio (STR) of 20:1 during 2018-19 was used as an indicator (Sl. No. 6 of Appendix 2)*. This indicator is derived from the RUSA norms which lays down that States can claim funds for additional posts of faculty to enable them to achieve the desired student-teacher ratio of 20:1.

The details of stream-wise STR at two test checked universities are stated in table below:

Table 3.5: Student Teacher Ratio in test-checked Universities during 2018-19¹⁴

HEI	Total number of students			Total number of teachers			Student Teacher Ratio		
	Arts	Science	Comm erce	Arts	Science	Comm erce	Arts	Science	Comm erce
Utkal University	1493	624	176	80	51	13	19:1	12:1	14:1
North Odisha University	321	459	NA ¹⁵	12	32	NA	27:1	14:1	NA

(Source: Data furnished by the two test checked universities)

From the table above, it is seen that in Utkal University, the stream wise STR for the year 2018-19 was as prescribed by RUSA. In case of North Odisha University, however, the STR was above the desired ratio of 20:1 in the Arts stream.

In context of the colleges, Audit scrutiny revealed that of the 24 test checked colleges of Utkal University, in 21 colleges the STR was higher than the prescribed ratio in all the three main streams namely, Arts (ranging between 25:1 and 83:1), Science (ranging between 24:1 and 105:1) and Commerce (ranging between 21:1 and 428:1).

In the eight test checked colleges of the North Odisha University, the STR was higher than the prescribed ratio in Arts (ranging between 21:1 and 70:1), Science (ranging between 21:1 and 88:1) and Commerce (ranging between 35:1 and 98:1) streams.

Thus, while at the University level, most streams were able to meet the STR, a number of colleges need to dedicate significant amount of effort to bring down

¹⁴ One year (2018-19) data as per indicator

¹⁵ Commerce stream not available in NOU PG level

the STR. Besides being against the norms, an unfavorable STR is indicative of higher workload per teacher and impacts quality of education imparted.

In reply, the Higher Education Department stated (September 2020) that the Government is trying in all possible ways to address the vacancy position in colleges. As the rate of retirement is higher than the recruitment, the Government is taking steps to speed up the process of recruitment through Odisha Public Service Commission and State Selection Board.

B. Availability of teachers with minimum prescribed qualification

Paragraph 3.4.4 of UGC (Affiliation of Colleges by University) Regulations, 2009 prescribes that the number of teaching posts, qualification of teaching staff and their recruitment/promotion procedure and condition of the services shall be in accordance with the Statutes/Ordinance/ Regulation of the University/State Government/UGC.

As per Government of Odisha notification, the minimum educational qualification for appointment of teachers in universities should be 55 per cent marks at Master's degree along with qualifying in the National Eligibility Test. In case of colleges, the minimum educational qualification was Master's Degree with at least 55 per cent marks.

The information¹⁶ furnished by the test checked HEIs, as verified by Audit, highlighted that in all these institutions, the teachers appointed during 2014-19 had fulfilled the minimum prescribed qualification criteria as prescribed by the Government of Odisha.

C. Full-time teachers with Ph.D

To assess the efforts of test checked HEIs in recruiting full time teachers with Ph.D degrees, *the average percentage of full-time teachers with Ph.D. during 2014-19 was used an indicator (Sl. No. 7 of Appendix 2)*. This indicator is also one of the key indicators used by NAAC during assessment and accreditation process of HEIs.

As per information provided by the two test checked Universities, the position of full time teachers with Ph. D during 2014-19 is given in **Table 3.6** below:

Table 3.6: Number of full-time teachers with Ph. D

University	Utkal University					North Odisha University				
	2014-15	2015-16	2016-17	2017-18	2018-19	2014-15	2015-16	2016-17	2017-18	2018-19
No. of full time teachers	114	123	154	153	144	31	37	37	43	44
No. of full time teachers with Ph.D	99	108	134	133	123	NA	NA	NA	NA	40
Percentage	87	88	87	87	85	-	-	-	-	91

(Source: Data furnished by Utkal University & North Odisha University) NA-Not Available

¹⁶ Data not available for NOU and four colleges (SMS College, Puri, Gopinathdev College, Puri, Bapujee Degree College, Chhendipada and UG College, Khamar. Data available for UU (19 departments) and 28 test checked colleges for five years (2014-15 to 2018-19)

Scrutiny of information revealed that in case of Utkal University, a high number of full time teachers were Ph.D holders, averaging 87 *per cent* during 2014-19. North Odisha University furnished data with respect to the number of full time teachers with Ph.D. degree for only one year, *i.e.*, 2018-19 in which, 91 *per cent* of full time teachers of the total number of teachers had Ph.D (data for 2014-2018 not maintained). Out of 24 test-checked colleges under Utkal University, in 19 test checked colleges, it was noticed that an average of 19 *per cent* teachers had Ph.D. degrees. The data for the remaining five colleges¹⁷ were not made available to Audit.

In the eight test checked colleges of North Odisha University, it was noticed that during the period 2014-19, 13 *per cent* teachers had Ph.D. degrees.

In a comparison of quality of teachers, it was noticed that the Ph.D holders in Government Colleges were 58 *per cent* against 14 *per cent* in Non-Government Colleges.

During accreditation of universities, NAAC awarded maximum scores to the institutions where 70 *per cent* and above teachers were having Ph.D. during 2014-19. Hence, as per NAAC benchmark, Utkal University was eligible for scoring maximum marks with respect to this indicator. However, due to non-availability of complete information, Audit could not comment on the performance of North Odisha University with respect to this indicator.

D. Full time teachers who received awards, recognition and fellowship

Since recognition of teachers at State, National and International levels is a marker of their teaching quality, *the percentage of full-time teachers who received awards, recognition and fellowships at State, National and International level from Government, recognised bodies during 2014-19 was used an indicator (Sl. No. 8 of Appendix 2)* for assessing quality of teaching staff in HEIs. This indicator is derived from one of the key indicators used by NAAC during assessment and accreditation process of HEIs.

Scrutiny of information in respect of above mentioned indicator revealed that in Utkal University, 65 *per cent* of full-time teachers received awards and recognition at National and International level from Government, recognised bodies during 2014-18¹⁸. With regard to the 20 test checked colleges of the Utkal University¹⁹ it was noticed that four *per cent* of full-time teachers received awards and recognition during the same period.

In case of North Odisha University, 14 *per cent* of full-time teachers received awards and recognition at State, National and International level from Government, recognised bodies during 2018-19²⁰. In the eight test checked colleges of the University, none of the full-time teachers received any awards and recognition during 2014-19.

During accreditation of universities, NAAC awarded maximum grade points to the institution where 10 *per cent* and above full-time teachers received

¹⁷ Janata College, UG Mahavidyalaya, SMS college, Bapujee college and Dhenkanal Autonomous college

¹⁸ Data for 2018-19 was not maintained

¹⁹ Data of four test checked colleges was not made available to Audit,

²⁰ Data for years 2014-15 to 2017-18 not maintained by the University

awards, recognition and fellowship, *etc.*, during 2014-19. Hence, as per NAAC benchmark, Utkal University was eligible to get maximum score against this benchmark. However, due to non-availability of complete information, Audit could not comment on the performance of North Odisha University with respect to this indicator.

E. Teachers provided with financial support to attend Conferences/workshops

To assess number of teachers provided with financial support to attend conferences/workshops in the test checked universities and colleges, *the average percentage of teachers provided with financial support to attend conferences/workshops and towards membership fee of professional bodies during 2014-19 was used an indicator (Sl. No. 9 of Appendix 2)*. This indicator is derived from one of the key indicators used by NAAC during assessment and accreditation process of HEIs.

With reference to this indicator, information was provided by 19 departments of Utkal University where it was noted that one to two *per cent* of full-time teachers received financial support for attending conference/workshop during 2014-19. In case of North Odisha University, during the same five-year period, three to 14 *per cent* of teachers received financial support for attending conference/workshop.

It was observed that no teacher was provided financial support to attend conferences/workshops in the 32 test checked colleges.

During accreditation of universities, NAAC awarded maximum grade points to an institution where institution was providing financial support to on an average 50 *per cent* and above teachers to attend conferences/workshops and membership fee of professional bodies during 2014-19. Hence, as per NAAC benchmark, none of the test checked HEIs were eligible for scoring maximum marks with respect to this indicator.

3.1.2.3 Professional Development training of faculty

Para 7.1.3 of Report on ‘Inclusive and Qualitative Expansion of Higher Education’ issued under 12th FYP stated that Faculty development initiatives could include areas like entry level orientation, curriculum development, teaching and learning, research and innovation, engagement with social concerns and leadership development. Customised faculty development programmes may be developed on a large scale. Further, as per NAAC Manual, teachers need to take initiative to learn and keep themselves abreast with the latest development, to improve, continuously seek improvement in their work and strive for individual and institutional excellence.

To assess number of teachers attending professional development programs in the test checked universities and colleges, *the average percentage of teachers attending professional development programs viz., Orientation Programme, Refresher Course, Short Term Course and Faculty Development Programme during 2014-19 was used an indicator (Sl. No. 10 of Appendix 2)*.

Scrutiny of files and information provided by test checked two universities and 32 colleges revealed the following:

As per information provided by 19 departments of Utkal University and North Odisha University, the number of teachers attending professional development programs during 2014-19 is given in the table below.

Table 3.7: Teachers attending professional development programs during 2014-19

Name of the University	Utkal University ²¹					North Odisha University				
	2014-15	2015-16	2016-17	2017-18	2018-19	2014-15	2015-16	2016-17	2017-18	2018-19
Number of full time teachers	85	98	103	100	90	31	37	37	43	44
Number of teachers attending professional development programs during the year (percentage)	18 (21)	21 (21)	34 (33)	39 (39)	29 (32)	4 (13)	3 (8)	2 (5)	9 (21)	5 (11)

(Source: Data furnished by 19 departments of Utkal University and North Odisha University)

As seen from table above, during 2014-19, in Utkal University, on an average only 29 *per cent* of full time teachers attended professional development training programs. This figure was far lower for North Odisha University, where during the same period, only an average of 12 *per cent* of full time teachers attended such programs.

In the 24 test checked colleges of Utkal University, during 2014-19, it was noticed that, six *per cent* of full time teachers took part in professional development programs while in North Odisha University (eight test checked colleges), this number was slightly better at nine *per cent*.

During accreditation of universities, NAAC awarded maximum grade points to the institutions having 40 *per cent* and above performance on the above parameter. So both Utkal University & North Odisha University lagged far behind this benchmark. As it was observed that, in the test checked colleges, negligible number of teachers attended training programs for capacity development during the last five years, Government needs to take active steps in order to ensure that a higher percentage of their faculty participates in programs for professional development.

Higher Education Department (September 2020) stated that the Government had decided to provide short-term training to 14,000 teachers of all categories of colleges by the universities with World Bank assistance. However, no supporting documents and time schedule of such trainings were furnished to Audit in support of the reply.

3.1.2.4 Robust Examination and evaluation system

As per NAAC manual, the effectiveness of examination system of a HEI depends on regularity in conducting examinations, quality of questions, how well it actually tests the program specific outcomes and course outcomes, *etc.*

²¹ The professional development status of the teaching staff of 19 departments (out of 27 departments) of Utkal University have been furnished to Audit

A high quality evaluation system contributes towards enhancing the competence of students.

A. Delay in conduction of examination and declaration of result

As per Odisha University First Statute (OUFS) 1990, the final examination at university level as well as college level is to be held by 15th May of every academic year and results are to be declared by 30th June (*i.e.* within 45 days of completion of final examination).

(i) Delay in conduct of Final Exams

On scrutiny of records of examination wing of Utkal University, it was observed that in case of examinations held at the University level, the University conducted examinations of PG courses with delays ranging between two and 62 days during the years 2014-19. Delayed conduct of the exam led to delay in declaration of results as well as in the start of academic sessions. In case of UG courses, however, it was noted that the University had conducted the examinations within due time for its affiliated colleges.

At North Odisha University, a minimal delay of one to five days occurred in conduct of examination at university level for PG courses. In case of UG courses, North Odisha University conducted examination within stipulated timelines for its affiliated colleges.

(ii) Delay in declaration of results

Timely declaration of results is extremely important, especially for graduating students as many of their post-study opportunities such as employment, further studies, enrolment in competitive examinations, *etc.*, are dependent upon their performance in the examinations. Any delay in declaration has the potential to cause great damage to the future of such students.

At Utkal University, it was observed that during the period 2014-19, there were delays ranging between 133 to 259 days in the declaration of results of PG courses with a maximum delay of 259 days in 2018 beyond the scheduled date. The University stated that these delays have occurred due to increase in the number of students and shortage of support staff.

In case of UG courses, the results of the affiliated colleges were declared by Utkal University within the due timeline during 2014-18 and there was a minor delay of 10 days in the declaration of results during 2018-19.

In North Odisha University, it was observed that the results of final examinations of PG courses at University level were declared with a delay of two to 27 days during 2014-19.

In case of UG courses, the results of the affiliated colleges were declared by North Odisha University with a delay of 25 to 66 days during 2014-19.

From the above analysis, it is clear that Utkal University failed to adhere to the OUFS, 1990 guidelines and its Academic Calendar for timely conduct of exam and declaration of result. Delayed declaration of results affects the on time admission process of students, thus, depriving students from getting admissions in institutions of their choice.

B. Reevaluation process

The quality of assessment process in a HEI depends on the extent of transparency in the system, an effective feedback system as well as, the regulatory mechanisms for prompt action on possible errors. The process of Reevaluation allows for re-submission of answer books by students for review in cases where they are not satisfied with their marks obtained in a paper.

At Utkal University, no records were maintained regarding rechecking of total marks at UG level examinations. At PG level, although the records were not maintained properly, Audit could ascertain the number of rechecks from the revision notifications issued. During 2014-19, it was observed that results of 818 students were rechecked and results of 808 students were changed (98.8 *per cent*). Such a large percentage of change in results raises a question on the robustness of the evaluation process in the University.

In North Odisha University, 420 out of 67,869 students (PG &UG), who appeared in examinations during 2014-19, applied for rechecking of their results. On re-checking, results of 13 students (3.10 *per cent*) were revised.

On being pointed by Audit, Utkal University accepted the Audit observation and noted it for future correction. For delay in conduct of examination and declaration of result, the University stated that it was due to the increasing number of courses and students and diminishing supporting staff over the years.

Summing up and recommendations

Effective Teaching Processes

The availability of ICT infrastructure (classrooms) and the number of faculty using ICT tools in the test checked colleges remained extremely low.

The vacancy position in Utkal University and North Odisha University was 38 *per cent* and 34 *per cent* respectively in 2018-19 and in both the Universities, there were significant instances of persistent vacancies. While the faculty in HEIs met the minimum qualification standards laid down for them, only 29 *per cent* and 12 *per cent* of teaching staff of Utkal and North Odisha University were sent for professional development training programs.

The delay in declaration of results by Utkal University ranged from 133 to 259 days indicating absence of timeliness in conducting academic activities. Further, after rechecking of marks of 818 students, results of 808 students changed, which raised questions with regard to the operational and monitoring aspects of the evaluation mechanism in place.

All the lacunae pointed out above had severe implications on the effectiveness and quality of education imparted to students in the HEIs as also on future career and educational progression of students.

Recommendations:

- Adequate emphasis may be given by the State Government towards creating fully IT enabled classrooms, investing in IT infrastructure and IT based learning, especially in the colleges. Teachers should also be

provided training for making effective use of available ICT tools for imparting learning.

- As non-availability of faculty has a direct impact on quality of education imparted, necessary steps may be taken by the Government and Universities to ensure that vacancies observed within the range of 28 to 38 *per cent* in test checked Universities and colleges, especially persistent vacancies are filled expeditiously.
- For continued professional development of teachers, faculty in Universities and Colleges should be encouraged to participate in training programs.

3.2 Betterment of society by creating new knowledge through effective research

The quality of research work directly translates into quality of teaching and learning imparted in classrooms, thereby benefitting both students and society at large. The promotion of research would also help the State to evolve as a knowledge reservoir and facilitate a culture of innovation.

Para 7.1.3 and Para 7.1.19 (a) of Report on ‘Inclusive and Qualitative Expansion of Higher Education’ issued under 12th FYP stated that Research capacities need to be consciously developed in the HEIs. Adequate funding and initiatives/schemes need to be developed. Every University should allocate a certain proportion of their annual budget as an earmarked budget for research and innovation. As per Para 3.3 of NAAC Manual, higher educational institutions have to be actively engaged in promotion of research through evolving appropriate policies and practices, making adequate resources available and encouraging active research involvement of teachers and scholars in research.

Aspects related to research inputs, activities and research outcomes have been discussed in detail in this section. Volume of research grants, teachers’ contributions towards research, student participation in research projects and quantum of research products generated, *etc.*, have been scrutinised during the audit. Further, in order to make an objective assessment of the efforts and performance of HEIs in encouraging research activities, certain indicators have also been identified.

Each university has a Research and Development Cell (R&D Cell) to monitor the flow of grants to various departments of the HEI for research projects as well as monitor the timely completion of these projects.

The audit findings concerning research in HEIs and results of evaluation of identified indicators related to these areas for the test checked universities and colleges are given in succeeding paragraphs.

3.2.1 Research Inputs

3.2.1.1 Volume of Research Grant received by Higher Educational Institutions

The position of grants received for research activities from different sources like GoI, GoO, UGC, Council of Scientific and Industrial Research (CSIR)

and Central Rice Research Institute (CRRI), etc., and utilisation thereof in the two test-checked universities during 2014-19 is given in table below:

Table 3.8: Funding and status of Research Projects as of November 2019

Years	Utkal University				North Odisha University			
	Number of projects	Funds received (₹ in lakh)	Completed	On going/incomplete	Number of projects	Funds received (₹ in lakh)	Completed	On-going/incomplete
2014-15	3	5.54	3	0	3	80.11	3	0
2015-16	5	13.85	2	3	6	59.46	6	0
2016-17	6	39.36	1	5	8	50.82	4	4
2017-18	20	173.76	1	19	7	52.83	2	5
2018-19	15	76.34	1	14	4	19.10	0	4
Total	49	308.85	8	41	28	262.32	15	13

(Source: Data furnished by Utkal University & North Odisha University)

Utkal University

During 2014-19, in Utkal University, 49 projects were undertaken with a total Government grant of ₹3.09 crore. Out of 49 projects only eight (16.33 per cent) have been completed till the date of Audit. The stipulated date of completion of these projects was not furnished to Audit. Thus the time-period of delay in completion of the ongoing 41 projects could not be ascertained by the Audit.

The amount of funds transferred to the concerned University departments and utilisation of the funds received, was not maintained and monitored by the R&D Cell of the University, due to which the actual amount of expenditure could not be ascertained by the Audit.

North Odisha University

At North Odisha University, 28 projects were undertaken with a total grant of ₹2.62 crore, out of which 15 projects (53.57 per cent) were completed within the due date. The remaining 13 projects are under execution and their scheduled completion period is not yet over²² (November 2019). Out of the received amount of ₹2.62 crore, amount of ₹2.28 crore (87 per cent) was spent on the implementation of the projects as on the date of Audit.

In the test checked 32 colleges, Audit observed that UGC granted Minor Research Projects (Grants up to ₹ 3 lakh to General streams researchers) in favour of 20 teachers (three per cent) out of 677 teachers during 2014-19. All the Minor research projects were completed by the date of Audit.

Thus, there was a lack of research activities at the level of the colleges as highlighted by the fact that only three per cent of teachers were provided grants for research projects by UGC. In case of Utkal University, there is a

²² Scheduled dates of completion of seven projects were December 2020 and that of remaining six projects are 2021

need for better monitoring of the ongoing research projects at the University level as the R&D Cell has no details available of the expenditure made on the approved projects or their stipulated dates of completion.

3.2.2 Research Outcomes

NAAC suggests that quality research outcomes are beneficial for the discipline, society, industry, region and nation. Research outcomes of HEIs include research papers and publications, patents awarded, consultancies given externally, *etc.* We assessed these outcomes for the test checked HEIs, results of which are discussed below.

3.2.2.1 Patents, Consultancy and Researchers undertaking research

NAAC considers the number of patents published/awarded to an institution, consultancy projects undertaken by faculty, *etc.*, during accreditation of the institution. Consultancy shows the credibility of the university's research acumen in the outside world. While the university personnel extend their expertise to other agencies, it also generates some revenue along with the research facilities. It should be ensured that the faculty taking up consultancy is properly rewarded, and the finances generated through consultancy are fairly utilised by the institution. Besides, the rank of university in NIRF also emphasises on the number of patents, consultancies and researchers and accordingly scores are awarded.

To assess the performance of test checked institutions in doing effective research, *the number of patents awarded to the institution during 2014-19 was used as an indicator (Sl. No. 11 of Appendix 2)*. This indicator is also one of the key indicators used by NAAC during the assessment and accreditation process of HEIs.

In Utkal University, during 2014-19 only one patent was published in the year 2017-18, but not granted till the date of Audit. As regards consultancies, Utkal University had received ₹71.74 lakh as receipts for four consultancy projects between 2014-19.

At North Odisha University, no patent has been published or granted in the last five years. However, the University had received ₹2.46 crore revenue from 39 consultancy projects.

In the test checked 32 colleges, Audit observed that no patents had been published or awarded during the period 2014-19.

During accreditation of universities, NAAC awarded maximum grade points to the institutions where 20 and above patents were rewarded. Both the universities were not able to get any grade point based on this criterion.

Further, clearly in the case of colleges, there is a need to encourage research activities which would besides adding to revenue (*via* patents, consultancies), also add to the credibility of the HEI.

3.2.2.2 Teachers' contributions to Research in HEIs

A. Teacher's Contribution

As per NAAC manual, quality research outcome is beneficial for the discipline, society, industry, region and nation. NAAC considers the number

of research papers per teacher published in UGC notified Journals and number of books and chapters in edited volumes/books published per teacher during accreditation of an institution.

To assess the number of research publications per teacher in the Journals notified on UGC website during 2014-19 was used as an indicator (Sl. No. 12 of Appendix 2).

The details of number of research papers published in UGC notified Journals and number of books and chapters in edited volumes/books published in test checked universities are as follows:

Table 3.9: Number of research papers published and number of books and chapters in edited volumes/ books published in 2014-19

Name of university	Average number of full-time teachers during last 5 years	Number of papers published in UGC notified journal in	Number of papers published per teacher (3/ 2)	Total number Books & chapters in edited volumes/published and papers in national/international conference proceedings	Number of Books & chapters in edited volumes/published and papers in national/international conference proceedings per teacher (5/2)
1	2	3	4	5	6
Utkal University	138	1984	14.38	402	2.91
North Odisha University	39	240	6	220	5.64

(Source: Data furnished by Utkal University & North Odisha University)

During accreditation of universities, NAAC awarded maximum grade points for number of 10 publications per teacher. Therefore, Utkal University scored maximum against this criterion with 14 publications per teacher, while North Odisha University was lagging in this aspect with six publications per teacher.

Audit observed that in only four colleges²³ out of 32 test-checked colleges, 84 research papers were published by the teachers in UGC notified journals in the last five years. In the remaining 28 colleges, no research papers were published by the teachers in notified journals.

B. Number of teachers awarded international fellowship

NAAC during assessment and accreditation process of HEIs used the key indicator '*number of teachers awarded international fellowship for advanced studies/ research during 2014-19 (Sl. No. 13 of Appendix 2).*

It was noticed that during 2014-19, out of an average of 138 full time teachers, only five teachers got international fellowship for advance study in Utkal University. In North Odisha University, during the same five-year period, only two teachers got this award, out of an average of 39 full time teachers.

In the 32 test-checked colleges, Audit observed that no teacher got international fellowship for advance study during 2014-19.

²³ Rajdhani college, Bhubaneswar, Dhenkanal Autonomous college, DD Autonomous college, Keonjhar and UG Mahavidyalaya, Khamar

During accreditation of universities, NAAC for the indicator prescribed maximum score to universities where on an average 40 *per cent* and more teachers were awarded international fellowship for advanced studies/research during 2014-19. Hence, as per NAAC benchmarks, none of the Universities were eligible for scoring any marks.

The lower number of publications per teacher in North Odisha University as well as the limited number of international fellowships awarded to teachers in test checked colleges and universities is indicative of insufficient encouragement given and attention paid, to research activities in these HEIs.

3.2.3 Collaborative Activities

3.2.3.1 Industry-academia connect

Academia and Industry share a symbiotic relationship. Engagement between universities and industries carry the idea of mutuality and sharing of knowledge and expertise.

Further, as per paragraph 3.7 of NAAC Manual, the HEIs can maintain a closer contact with the work field through collaboration. It helps to keep the academic activities in the HEI in a more realistic perspective and also expand the scope of learning experiences for students. Collaboration can be sought with academic institutions or industry or other agencies of professional and social relevance. The range of activities could include training, student exchange, faculty exchange, research and resource sharing, among others. For making collaborative endeavor impactful, it is necessary that there is a formal agreement or understanding between the institution and other HEIs or agencies for such activities.

To assess encouragement given by the test checked institutions for industry-academia connect, *number of functional MOUs executed with institutions of national/ international importance, other Universities, industries, etc., during 2014-19 was used as an indicator (Sl. No. 8 of Appendix 1)*. The results of this evaluation and related audit findings are discussed below.

Scrutiny of information provided by test checked two universities and 32 colleges revealed that during 2014-19:

Utkal University and test-checked colleges

Eight National and one International Memorandum of Understandings (MOUs) were signed during 2014 to 2019²⁴ in the University. In the test checked 24 colleges of Utkal University, no MoUs were signed with any Academy or Industry.

North Odisha University and test-checked colleges

At North Odisha University, one MoU was signed in May 2015 with National Remote Sensing Centre on “Measurement of Vegetation and biomass parameters under Vegetation Carbon Pool Assessment”. In the test checked eight colleges, however, no MoUs were signed with any Academy or Industry during 2014-19.

²⁴ 2014-15-one MoU, 2015-16 – six MoUs, 2016-17 – two MoUs

During accreditation of universities, NAAC awarded maximum grade points for 30 number of MoUs signed by an institution. Utkal University with nine MoU and North Odisha University with one MoU are far from achieving the benchmark in this criterion.

Further, lack of collaborative activities with academia or industries deprived HEIs of benefits expected from such collaborations and MoUs like, funding for relevant research work, assistance towards student internships, placements and training, *etc.*

In reply (September 2020) Government stated that as colleges are teaching based institutions, conducive environment is not available for executing MoUs. The reply of the Government is not tenable as training, research and internship is also part of teaching process and should be encouraged at college levels.

Summing up and recommendations

Effective Research

The percentage of research works that were completed in Utkal University, remained low (16 *per cent*) and un-encouraging. The record maintenance regarding the details of projects like funds utilisation, timeline of project implementation remained poor, especially in Utkal University, due to which Audit could not comment adequately on these aspects. Development of patents and consultancies remained un-encouraging in test-checked Universities and non-existent in test-checked colleges. The test-checked colleges had no collaborative activities with industries and no MoUs were signed. Thus, there is clear need to encourage and incentivise research activities and collaborative efforts with industry and academia in the State's HEIs.

Recommendation:

- In order to extend envisaged benefits to students and society as a whole, Universities may ensure that research projects are encouraged and conducted in a timely manner. The Research and Development Cell of the Universities should work proactively in monitoring timely completion of these research projects and flow of funds to them.
- Publication of research papers by teachers needs an impetus in the right direction especially, in case of colleges. Development of patents and consultancies and Industry-academia connect needs to be motivated in Universities and initiated in colleges.