LEARNING OUTCOME BASED VOCATIONAL CURRICULUM

JOB ROLE: Assistant Mason
(QUALIFICATION PACK: Ref. Id. CON/Q0102)
SECTOR: Construction Sector
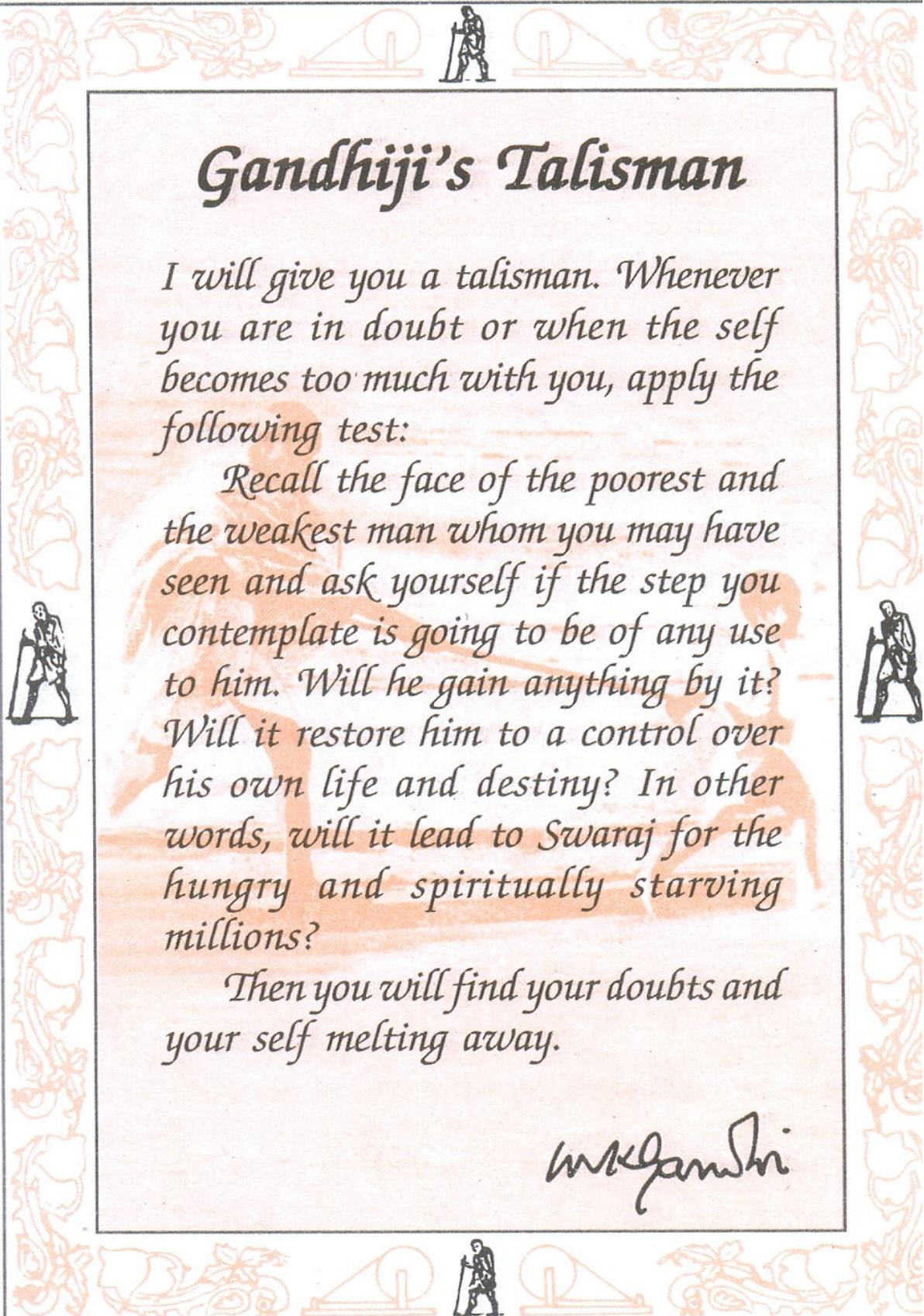
Classes 9 and 10

Gandhiji's Talisman

I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test:

Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj for the hungry and spiritually starving millions?

Then you will find your doubts and your self melting away.

M K Gandhi

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Classes 9 and 10

NCERT

PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION
Shyamla Hills, Bhopal- 462 013, M.P., India

LEARNING OUTCOME BASED CURRICULUM
Construction - Assistant Mason

June, 2017

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FOREWORD

The Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE) a constituent of the National Council of Educational Research and Training (NCERT) is spearheading the efforts of developing competency based curricula and courseware aimed at integrating both vocational and general qualifications to open pathways of career progression for students. It is a part of Centrally Sponsored Scheme of Vocationalisation of Secondary and Higher Secondary Education (CSSVSHSE) launched by Ministry of Human Resource Development, Government of India in 2012. The PSS Central Institute of Vocational Education (PSSCIVE) is developing under the project approved by the Project Approval Board (PAB) of *Rashtriya Madhyamik Shiksha Abhiyan* (RMSA).

The main purpose of the competency based curricula is to bring about the improvement in teaching-learning process and working competences through learning outcomes embedded in the vocational subject.

It is a matter of great pleasure to introduce this competency based curriculum on the Course Engineering and Technology-Assistant mason as part of the vocational training packages for **Assistant mason**. The curriculum has been developed for the secondary students of vocational stream and is aligned to the National Occupation Standards (NOSs) of a job role identified and approved under the National Skill Qualification Framework (NSQF).

The curriculum aims to provide children with employability and vocational skills to support occupational mobility and lifelong learning. It will help them to acquire specific occupational skills that meet employers' immediate needs. The teaching process is to be performed through the interactive sessions in classrooms, practical activities in laboratories and workshops, projects, field visits, and professional experiences.

The curriculum has been developed and reviewed by a group of experts and their contributions are greatly acknowledged. The utility of the curriculum will be adjudged by the qualitative improvement that it brings about in teaching-learning. The feedback and suggestions on the content by the teachers and other stakeholders will be of immense value to us in bringing about further improvement in this document.

Hrushikesh Senapaty
Director
National Council of Education Research &
Training

PREFACE

India today stands poised at a very exciting juncture in its saga. The potential for achieving inclusive growth are immense and the possibilities are equally exciting. The world is looking at us to deliver sustainable growth and progress. To meet the growing expectations, India will largely depend upon its young workforce. The much-discussed demographic dividend will bring sustaining benefits only if this young workforce is skilled and its potential is channelized in the right direction.

In order to fulfil the growing aspirations of our youth and the demand of skilled human resource, the Ministry of Human Resource Development (MHRD), Government of India introduced the revised Centrally Sponsored Scheme of Vocationalisation of Secondary and Higher Secondary Education that aims to provide for the diversification of educational opportunities so as to enhance individual employability, reduce the mismatch between demand and supply of skilled manpower and provide an alternative for those pursuing higher education. For spearheading the scheme, the PSS Central Institute of Vocational Education (PSSCIVE) was entrusted the responsibility to develop competency based curricula, student workbooks, teacher handbooks and e-learning materials for the job roles in various sectors, with growth potential for employment.

The PSSCIVE firmly believes that the vocationalisation of education in the nation need to be established on a strong footing of philosophical, cultural and sociological traditions and it should apply address the needs and aspirations of the students besides meeting the skill demands of the industry. The curriculum, therefore, aims at developing the desired professional, managerial and communication skills to fulfil the needs of the society and the world of work. In order to honour its commitment to the nation, the PSSSCIVE has initiated the work on developing learning outcome based curricula with the involvement of faculty members and leading experts in respective fields. It is being done through the concerted efforts of leading academicians, professionals, policy makers, partner institutions, Vocational Education and Training experts, industry representatives, and teachers. The expert group through a series of consultations, working group meetings and use of reference materials develops a National Curriculum. Currently, the Institute is working on developing curricula and courseware for over 100 job roles in various sectors.

We extend our gratitude to all the contributors for selflessly sharing their precious knowledge, acclaimed expertise, and valuable time and positively responding to our request for development of curriculum. We are grateful to MHRD and NCERT for the financial support and cooperation in realising the objective of providing competency based modular curricula and courseware to the States and other stakeholders under the PAB (Project Approval Board) approved project of *RashtriyaMadhyamikShiskhaAbhiyan* (RMSA) of MHRD.

Finally, for transforming the proposed curriculum design into a vibrant reality, all the institutions involved in the delivery system shall have to come together with a firm commitment and they should secure optimal community support. The success of this curriculum depends upon its effective implementation and it is expected that the managers of vocational education and training system, including subject teachers will make efforts to create better facilities, develop linkages with the world of work and foster a conducive environment as per amendments made in the curriculum document.

The PSSCIVE, Bhopal remains committed in bringing about reforms in the vocational education system through the learner-centric curricula and courseware. We hope that this document will prove useful in turning out more competent Indian workforce for the 21st century.

DR. RAJESH P. KHAMBAYAT
Joint Director
PSS Central Institute of Vocational Education

ACKNOWLEDGEMENTS

PSSCIVE Team

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1. COURSE OVERVIEW

COURSE TITLE: Construction-Assistant Mason

At Construction site Assistant Mason worker performs the basic operations related to construction of a building. Assistant mason help in handling and use of hand and power tools related to masonry work. He also assist in tiling, stone laying, concrete masonry works, brick/ Block work, fixing doors and windows and plastering works. Construction site workers provide customers all the information available with them to help customers to select and care for building.

COURSE OBJECTIVES: On completion of the course, students should be able to:

☐   Apply effective oral and written communication skills to interact with people and customers;
☐   Identify the principal components of a computer system;
☐   Demonstrate the basic skills of using computer;
☐   Demonstrate self-management skills;
☐   Demonstrate the ability to provide a self-analysis in context of entrepreneurial skills and abilities;
☐   Demonstrate the knowledge of the importance of green skills in meeting the challenges of sustainable development and environment protection;
☐   Identify and control hazards in the workplace that pose a danger or threat to their safety or health, or that of others.
☐   Identify and demonstrate safe use of hand and power tools/equipment used in construction;
☐   Gain insight into General Mason job role and its career progression
☐   Construct masonry structures using brick / bloc
☐   Execute plaster on internal & external surfaces of masonry and RCC structure
☐   Carry out waterproofing works for structures using cementitious materials
☐   Build structures using random rubble masonry
☐   Carry out IPS / Tremix flooring
☐   Work effectively in a team to deliver results at a construction site
☐   Plan and organize work to meet expected outcomes
☐   Work according to personal health, safety and environment protocol at Construction site

COURSE REQUIREMENTS: The learner should have the basic knowledge of science.

COURSE LEVEL: This is a beginner level course. On completion of this course, a student can take up an Intermediate level course for a job role in Construction sector, such as General mason in Class XI and Class XII.

COURSE DURATION: **400 hrs**
                      Class 9   :   200 hrs
                      Class 10 :   200 hrs
                      _____
                      Total   :   400 hrs
                      _____

2. SCHEME OF UNITS

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 9 and 10 opting for vocational subject along with general education subjects. The unit-wise distribution of hours and marks for Class 9 is as follows:

	CLASS 9		
	Units	**No. of Hours for Theory and Practical 200**	**Max. Marks for Theory and Practical 100**
Part A	**Employability Skills**		
	Unit 1 : Communication Skills	20	
	Unit 2 : Self-management Skills	10	
	Unit 3 : Information and Communication Technology Skills	20	**10**
	Unit 4 : Entrepreneurial Skills	15	
	Unit 5 : Green Skills	10	
	Total	**75**	**10**
Part B	**Vocational Skills**		
	Unit 1: Building materials	30	
	Unit 2: Masonry Tools	25	
	Unit 3: Building Drawing	25	**30**
	Unit 4: Foundation	15	
		95	**30**
Part C	**Practical Work**		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
		10	**35**
Part D	**Project Work/Field Visit**		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
		15	**15**
Part E	**Continuous and Comprehensive Evaluation (CCE)**		
		5	**10**
	Total	**200**	**100**

The unit-wise distribution of hours and marks for Class 10 is as follows:

Units		No. of Hours for Theory and Practical =200 (160 Teaching and Training + 40 Evaluation)	Max. Marks for Theory and Practical = 100 (30 Theory and 70 Practical)
CLASS 10			
Part A	**Employability Skills**		
	Unit 1 : Communication Skills	20	10
	Unit 2 : Self-management Skills	10	
	Unit 3 : Information and Communication Technology Skills	20	
	Unit 4 : Entrepreneurial Skills	15	
	Unit 5 : Green Skills	10	
	Total	**75**	**10**
Part B	**Vocational Skills**		
	Unit 1: Stone and Brick Masonry	30	20
	Unit 2: Scaffolding	25	
	Unit 3: Tiling, stone tiling and its laying	25	
	Unit 4: Floor and wall tiles and its laying	15	
		95	**20**
Part C	**Practical Work**		
	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
		10	**35**
Part D	**Project Work/Field Visit**		
	Practical File/Student Portfolio	10	10
	Viva Voce	05	05
		15	**15**
Part E	**Continuous and Comprehensive Evaluation (CCE)**		
		5	**10**
	Total	**200**	**100**

3. TEACHING/TRAINING ACTIVITIES

The teaching and training activities have to be conducted in classroom, laboratory/ workshops and field visits. Students should be taken to field visits for interaction with experts and to expose them to the various tools, equipment, materials, procedures and operations in the workplace. Special emphasis should be laid on the occupational safety, health and hygiene during the training and field visits.

CLASSROOM ACTIVITIES

Classroom activities are an integral part of this course and interactive lecture sessions, followed by discussions should be conducted by trained vocational teachers. Vocational teachers should make effective use of a variety of instructional or teaching aids, such as audio-video materials, colour slides, charts, diagrams, models, exhibits, hand-outs, online teaching materials, etc. to transmit knowledge and impart training to the students.

PRACTICAL WORK IN LABORATORY/WORKSHOP

Practical work may include but not limited to hands-on-training, simulated training, role play, case based studies, exercises, etc. Equipment and supplies should be provided to enhance hands-on learning experience of students. Only trained personnel should teach specialized techniques. A training plan that reflects tools, equipment, materials, skills and activities to be performed by the students should be submitted by the vocational teacher to the Head of the Institution.

FIELD VISITS/ EDUCATIONAL TOUR

In field visits, children will go outside the classroom to obtain specific information from experts or to make observations of the activities. A checklist of observations to be made by the students during the field visits should be developed by the Vocational Teachers for systematic collection of information by the students on the various aspects. Principals and Teachers should identify the different opportunities for field visits within a short distance from the school and make necessary arrangements for the visits. At least three field visits should be conducted in a year.

4. ASSESSMENT AND CERTIFICATION

Upon successful completion of the course by the candidate, the Central/ State Examination Board for Secondary Education and the respective Sector Skill Council will certify the competencies.

The National Skills Qualifications Framework (NSQF) is based on outcomes referenced to the National Occupation Standards (NOSs), rather than inputs. The NSQF level descriptors, which are the learning outcomes for each level, include the process, professional knowledge, professional skills, core skills and responsibility. The assessment is to be undertaken to verify that individuals have the knowledge and skills needed to perform a particular job and that

the learning programme undertaken has delivered education at a given standard. It should be closely linked to certification so that the individual and the employer could come to know the competencies acquired through the vocational subject or course. The assessment should be reliable, valid, flexible, convenient, cost effective and above all it should be fair and transparent. Standardized assessment tools should be used for assessment of knowledge of students. Necessary arrangements should be made for using technology in assessment of students.

KNOWLEDGE ASSESSMENT (THEORY)

Knowledge Assessment should include two components: one comprising of internal assessment and second an external examination, including theory examination to be conducted by the Board. The assessment tools shall contain components for testing the knowledge and application of knowledge. The knowledge test can be objective paper based test or short structured questions based on the content of the curriculum.

WRITTEN TEST

It allows candidates to demonstrate that they have the knowledge and understanding of a given topic. Theory question paper for the vocational subject should be prepared by the subject experts comprising group of experts of academicians, experts from existing vocational subject experts/teachers, and subject experts from university/colleges or industry. The respective Sector Skill Council should be consulted by the Central/State Board for preparing the panel of experts for question paper setting and conducting the examinations.

The blue print for the question paper may be as follows:

Duration: 3 hrs   **Max. Mark: 30**

| S.No. | Typology of Question | No. of Questions | | | Marks |
		Very Short Answer (1 mark)	Short Answer (2 Marks)	Long Answer (3 Marks)	
1.	Remembering – (Knowledge based simple recall questions, to know specific facts, terms, concepts, principles, or theories; identify, define or recite, information)	2	1	2	10
2.	Understanding – (Comprehension – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information)	1	2	2	11
3.	Application – (Use abstract information in concrete situation, to apply knowledge to new situations: Use given content to interpret a situation, private an example, or solve a problem)	0	1	1	05

4.	High Order Thinking Skills – (Analysis & Synthesis – Classify, compare, contrast, or differentiate between different pieces of information; Organize and/ or integrate unique pieces of information from a variety of sources)	0	1	0	02
5.	Evaluation – (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	0	1	0	02
	Total	3x1=3	6x2=12	5x3=15	30 (14 questions)

SKILL ASSESSMENT (PRACTICAL)

Assessment of skills by the students should be done by the assessors/examiners on the basis of practical demonstration of skills by the candidate, using a competency checklist. The competency checklist should be developed as per the National Occupation Standards (NOSs) given in the Qualification Pack for the Job Role to bring about necessary consistency in the quality of assessment across different sectors and Institutions. The student has to demonstrate competency against the performance criteria defined in the National Occupation Standards and the assessment will indicate that they are 'competent', or are 'not yet competent'. The assessors assessing the skills of the students should possess a current experience in the industry and should have undergone an effective training in assessment principles and practices. The Sector Skill Councils should ensure that the assessors are provided with the training on the assessment of competencies.

Practical examination allows candidates to demonstrate that they have the knowledge and understanding of performing a task. This will include hands-on practical exam and viva voce. For practical, there should be a team of two evaluators – the subject teacher and the expert from the relevant industry certified by the Board or concerned Sector Skill Council. The same team of examiners will conduct the viva voce.

Project Work (individual or group project) is a great way to assess the practical skills on a certain time period or timeline. Project work should be given on the basis of the capability of the individual to perform the tasks or activities involved in the project. Projects should be discussed in the class and the teacher should periodically monitor the progress of the project and provide feedback for improvement and innovation. Field visits should be organised as part of the project work. Field visits can be followed by a small-group work/project work. When the class returns from the field visit, each group might be asked to use the information that they have gathered to prepare presentations or reports of their observations. Project work should be assessed on the basis of practical file or student portfolio.

Student Portfolio is a compilation of documents that supports the candidate's claim of competence. Documents may include reports, articles, photos of products prepared by students in relation to the unit of competency.

Viva voce allows candidates to demonstrate communication skills and content knowledge. Audio or video recording can be done at the time of viva voce. The number of external examiners would be decided as per the existing norms of the Board and these norms should be suitably adopted/adapted as per the specific requirements of the vocational subject. Viva voce should also be conducted to obtain feedback on the student's experiences and learning during the project work/field visits.

CONTINUOUS AND COMPREHENSIVE EVALUATION

Continuous and Comprehensive Evaluation (CCE) refers to a system of school-based evaluation of students that covers all aspects of student's development. In this scheme, the term `continuous' is meant to emphasize that evaluation of identified aspects of students `growth and development' is a continuous process rather than an event, built into the total teaching-learning process and spread over the entire span of academic session. The second term `comprehensive' means that the scheme attempts to cover both the scholastic and the co-scholastic aspects of students' growth and development. For details, the CCE manual of Central Board of Secondary Education (CBSE) or the guidelines issued by the State Boards on the procedure for CCE should be followed by the Institutions.

5. UNIT CONTENTS

CLASS 9

Part A: Employability Skills

S.No.	Units	Duration (Hrs)
1.	Communication Skills - I	20
2.	Self-management Skills - I	10
3.	Information and Communication Technology Skills-I	20
4.	Entrepreneurial Skills - I	15
5.	Green Skills - I	10
	Total	**75**

Unit 1: Communication Skills – I			
Learning Outcome	**Theory (08 hrs)**	**Practical (12 hrs)**	**Total Duration (20 Hrs)**
1. **Demonstrate knowledge of various methods of communication**	1. Methods of communication - Verbal - Non-verbal - Visual	1. Writing pros and cons of written, verbal and non-verbal communication 2. Listing do's and don'ts for avoiding common body language mistakes	**05**

2. Identify elements of communication cycle	1. Meaning of communication 2. Importance of communication skills 3. Elements of communication cycle– (i) sender, (ii) ideas, (iii) encoding, (iv) communication channel, (v) receiver, (vi) decoding, and (vii) feedback	1. Draw a diagram of communication cycle 2. Role plays on communication process related to the sector/job role	05
3. Identify the factors affecting our perspectives in communication	1. Perspectives in communication 2. Factors affecting perspectives in communication - Visual perception - Language - Past experience - Prejudices - Feelings - Environment	1. Group discussion on factors affecting perspectives in communication 2. Sharing of experiences on factors affecting perspectives 3. Sharing experiences on factors affecting communication at workplace	05
4. Demonstrate the knowledge of basic writing skills	1. Writing skills related to the following: • Phrases • Kinds of sentences • Parts of sentence • Parts of speech • Use of articles • Construction of a paragraph	1. Demonstration and practice of writing sentences and paragraphs on topics related to the subject	05
Total			20

Unit 2: Self-management Skills – I

Learning Outcome	Theory (07 hrs)	Practical (03 hrs)	Total Duration (10 Hrs)
1. Describe the meaning and importance of self-management	1. Meaning of self-management 2. Positive results of self-management 3. Self-management skills	1. Identification of self-management skills 2. Strength and weakness analysis	05
2. Identify the factors that helps in building self-confidence	1. Factors that help in building self-confidence – social, cultural, and physical factors 2. Self-confidence building tips – getting rid of the negative thoughts, thinking	1. Role play exercises on building self-confidence 2. Use of positive metaphors/ words 3. Positive stroking on wakeup and before	05

	positively, staying happy with small things, staying clean, hygienic and smart, chatting with positive people, etc.	going bed 4. Helping others and working for community	
Total			**10**

Unit 3: Information and Communication Technology Skills – I

Learning Outcome	Theory (06 hrs)	Practical (14 hrs)	Total Duration (20 Hrs)
1. Describe the role of Information and Communication Technology (ICT) in day-to-day life and workplace	1. Introduction to ICT 2. Role and importance of ICT in personal life and at workplace 3. ICT in our daily life (examples) 4. ICT tools - Mobile, tab, radio, TV, email, etc.	1. Discussion on the role and importance of ICT in personal life and at workplace. 2. Preparing posters / collages for showing the role of ICT at workplace	**04**
2. Identify components of basic computer system and their functions	1. Computer system - Central Processing Unit (CPU), memory, motherboard, storage devices 2. Hardware and software of a computer system 3. Role and functions of Random Access Memory(RAM) and Read Only Memory(ROM) 4. Role and functions of Central Processing Unit 5. Procedure for starting and shutting down a computer	1. Connecting the cables and peripherals to the Central Processing Unit 2. Starting and shutting down a computer 3. Group discussion on the various aspects of hardware and software	**07**
3. Demonstrate use of various components and peripherals of computer system	1. Peripherals devices and their uses – mouse, keyboard, scanner, webcam, etc. of a computer system	1. Identification of various parts and peripherals of a computer 2. Demonstration and practice on the use of mouse 3. Demonstration and practice on the use of keyboard 4. Demonstration of the uses of printers,	**05**

		webcams, scanner and other peripheral devices 5. Drawing diagram of computer system and labelling it	
4. **Demonstrate basic computer skills**	1. Primary operations on a computer system – input, process, storage, output, communication networking, etc.	1. Identification of the various input and output units and explanation of their purposes	**04**
Total			**20**

Unit 4: Entrepreneurial Skills - I

Learning Outcome	Theory (06 hrs)	Practical (09 hrs)	Total Duration (15 Hrs)
1. **Identify various types of business activities**	1. Types of businesses – service, manufacturing, hybrid 2. Types of businesses found in our community 3. Business activities around us	1. Prepare posters of business activities found in cities/villages, using pictures 2. Discuss the various types of activities, generally adopted by small businesses in a local community 3. Best out of waste 4. Costing of the product made out of waste 5. Selling of items made from waster materials 6. Prepare list of businesses that provides goods and services in exchange for money	09
2. **Demonstrate the knowledge of distinguishing characteristics of entrepreneurship**	1. Meaning of entrepreneurship development 2. Distinguishing characteristics of entrepreneurship 3. Role and rewards of entrepreneurship	1. Prepare charts showing advantages of entrepreneurship over wages 2. Group discussions on role and features of entrepreneurship 3. Lectures/presentations by entrepreneurs on their experiences and success stories 4. Identify core skills of successful entrepreneur	06
Total			15

Unit 5: Green Skills - I

Learning Outcome	Theory (07 hrs)	Practical (03 hrs)	Total Duration (10 Hrs)
1. **Demonstrated the knowledge of the factors influencing natural resource conservation**	1. Introduction to environment, 2. Relationship between society and environment, ecosystem and factors causing imbalance 3. Natural resource conservation 4. Environment protection and conservation	1. Group discussion on hazards of deteriorating environment 2. Prepare posters showing environment conservation 3. Discussion on various factors that influence our environment	05
2. **Describe the importance of green economy and green skills**	1. Definition of green economy 2. Importance of green economy	1. Discussion on the benefits of green skills and importance of green economy 2. Prepare a Poster showing the importance of green economy with the help of newspaper/magazine cuttings	05
Total			**10**

Part B: Vocational Skills

S. No.	Units	Duration (Hrs.)
1	Building materials	30
2	Masonry Tools	25
3	Building Drawing	25
4	Foundation	15
	Total	**95**

Unit 1: Building Materials

Learning Outcome	Theory (10 Hrs)	Practical (20 Hrs)	Duration (30 Hrs)
1. **Identify elements of a building structure**	1. Elements of a building structure- Brick/Stone masonry Foundation, Plinth. Roof Wall, Floor, Chajja, lintel, roof, water supply, and sanitary fixtures, and fittings related electrical works, Doors and windows, Staircases	1. Visit a school building for identification of various elements of building structure	5

	Arches, Beams and, Columns		
2. Appreciate the importance of building elements	1. Foundation, Plinth. Roof Wall, Floor, Chajja, lintel, roof, water supply, and sanitary fixtures, and fittings related electrical works, Doors and windows and Staircases Arches and Lintels 2. Importance of each element s in building structure.	1. Enlist the building elements at your own residential building or school 2. Prepare a table comprises of building elements and their necessity	**5**
3. Explain the properties of building material used in construction	1. Properties of building material • Stones • Clay Products (Bricks, Tiles and Terra-cotta) • Cement • Lime • Ferrous Metals and Non-Ferrous Metals • Reinforcement steel and Commercial Forms • Mortar and Concrete/RCC • Building Finishing Materials • Miscellaneous Materials 2. Testing of building materials	1. Identify the material having good characteristics and do market survey for locally available building material 2. Do various field and laboratory tests on material	**10**
4. Calculate the quantity of items related to the building works	1. Units of measurement of civil work 2. Methods of measurement of quantity and calculation	1. Prepare a table of items of work and its working unit 2. Measure and calculate the quantities of civil items of any building construction project.	**10**

Unit 2. Masonry tools

Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)	Duration (25 Hrs)
1. Demonstrate the use of various masonry tools	1. Use and handling of basic masonry tools like Trowel, Plumb rule and Bob, Spirit level, Square, Line, pins, Bolster, Brick hammer, Scutch, Pick Axe, crowbar, Chisel, Mash Hammer, Boaster, Spall Hammer, Scrabbling Hammer, Bevel, Spade, Picks,	1. Identification of masonry tools 2. Draw the figure of masonry tools and label its uses	**25**

	Beaters, Wooden Float, Metal Float, Floating Rule, Racking Needle, Hacking tool, Scratcher, Pointing Tools (Nayals)		

Unit 3: Building Drawing

Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)	Duration (25 Hrs)
1. **Draw plan, section and elevation of an (Residential/Public) building**	1. Need of building drawings 2. Types of lines, Projection and its type, Dimensioning 3. Drawing Sheet Layout drawing instruments 4. Equilateral, Quadrilateral, Angle, square, diagonal. Trapezium, Polygons 5. Method of bisecting of given angle 6. Method of drawing perpendicular, line into 5 equal parts 7. Isometric and orthographic views 8. Plan, section and elevation of building (Residential/Public)	1. Identify various drawing instruments used 2. Draw line plan of residential building 3. Draw plan, section, elevation of an building with full detailing 4. Practice of drawing plan and elevation of (Residential/Public) building 5. Reading of building drawings and try to execute according to it at site	25

Unit 4: Foundation

Learning Outcome	Theory (05 Hrs)	Practical (10 Hrs)	*Duration* (15 Hrs)
1. **Explain the various types of the foundation**	1. Building Foundation: Why 2. Necessity of foundation and its types	1. Identification of different types of excavation	5
2. **Demonstrate the excavation of any building foundation**	1. Technique of excavation, check excavation as per drawing 2. Safety precautions during excavation 3. Proper keeping of tools after finishing of work	1. Identification of different types of equipment used in the excavation 2. Demarcation of centre line /layout for excavation 3. Demonstration and excavation practice 4. Calculate the volume of excavation work 5. Preparation of support for inside trench at excavated	10

		area 6. Cleaning of tools used for excavation	

CLASS 10

Part A - Employability Skills

S.No.	Units	Duration (Hrs)
1.	Communication Skills – II	20
2.	Self-management Skills - II	10
3.	Information and Communication Technology Skills – II	20
4.	Entrepreneurial Skills – II	15
5.	Green Skills - II	10
	Total	**75**

Unit 1: Communication Skills - II			
Learning Outcome	**Theory (12 hrs)**	**Practical (08 hrs)**	**Total Duration (20 Hrs)**
1. **Demonstrate knowledge of various methods of communication**	1. Methods of communication - Verbal - Non-verbal - Visual	1. Writing pros and cons of written, verbal and non-verbal communication 2. Listing do's and don'ts for avoiding common body language mistakes	**05**
3. **Provide descriptive and specific feedback**	1. Communication cycle and importance of feedback 2. Meaning and importance of feedback 3. Descriptive feedback - written comments or conversations 4. Specific and non-specific feedback	1. Constructing sentences for providing descriptive and specific feedback	**03**
3. **Apply measures to overcome barriers in communication**	1. Barriers to effective communication – types and factors 2. Measures to overcome barriers in effective communication	1. Enlisting barriers to effective communication 2. Applying measures to overcome barriers in communication	**04**
4. **Apply principles of communication**	1. Principles of effective communication 2. 7 Cs of effective communication	1. Constructing sentences that convey all facts required by the receiver 2. Expressing in a manner that shows respect to the receiver of the message	**03**

		3. Exercises and games on applying 7Cs of effective communication	
5. **Demonstrate basic writing skills**	2. Writing skills to the following: • Sentence • Phrase • Kinds of Sentences • Parts of Sentence • Parts of Speech • Articles • Construction of a Paragraph	1. Demonstration and practice of writing sentences and paragraphs on topics related to the subject	**05**
Total			**20**

Unit 2: Self-management Skills - II

Learning Outcome	Theory (05 hrs)	Practical (05 hrs)	Total Duration (10 Hrs)
1. **Apply stress management techniques**	1. Meaning and importance of stress management 2. Stress management techniques – physical exercise, yoga, meditation 3. Enjoying, going to vacations and holidays with family and friends 4. Taking nature walks	3. Exercises on stress management techniques – yoga, meditation, physical exercises 4. Preparing a write-up on an essay on experiences during a holiday trip	**06**
2. **Demonstrate the ability to work independently**	1. Importance of the ability to work independently 2. Describe the types of self-awareness 3. Describe the meaning of self-motivation and self-regulation	1. Demonstration on working independently goals 2. Planning of an activity 3. Executing tasks in a specific period, with no help or directives 4. Demonstration on the qualities required for working independently	**04**
Total			**10**

Unit 3: Information and Communication Technology Skills– II

Learning Outcome	Theory (08 hrs)	Practical (12 hrs)	Total Duration (20 Hrs)
1. **Distinguish between differentoperating systems**	1. Classes of operating systems 2. Menu, icons and task bar on the desktop	1. Identification of task bar, icons, menu, etc. 2. Demonstration	**17**

	3. File concept, file operations, file organization, directory structures, and file-system structures 4. Creating and managing files and folders	and practicing of creating, renaming and deleting files and folders, saving files in folders and sub-folders, restoring files and folders from recycle bin	
2. **Apply basic skills for care and maintenance of computer**	1. Importance and need of care and maintenance of computer - Cleaning computer components - Preparing maintenance schedule - Protecting computer against viruses - Scanning and cleaning viruses and removing SPAM files, temporary files and folders	1. Demonstration of the procedures to be followed for cleaning, care and maintenance of hardware and software	03
Total			**20**

Unit 4: Entrepreneurial Skills - II			
Learning Outcome	**Theory (06 hrs)**	**Practical (09 hrs)**	**Total Duration (15 Hrs)**
1. **List the characteristics of successful entrepreneur**	1. Entrepreneurship and society 2. Qualities and functions of an entrepreneur 3. Role and importance of an entrepreneur 4. Myth about entrepreneurship 5. Entrepreneurship as a career option	1. Writing a note on entrepreneurship as career option 2. Collecting success stories of first generation and local entrepreneurs 3. Listingthe entrepreneurial qualities – analysis of strength and weaknesses 4. Group discussionof self-qualitiesthat students feel are needed to become successful entrepreneur 5. Collect information and related data for a business 6. Make a plan in team for setting up a business	15
Total			**15**

Unit 5: Green Skills - II

Learning Outcome	Theory (07 hrs)	Practical (03 hrs)	Total Duration (10 Hrs)
1. **Demonstrate the knowledge of importance, problems and solutions related to sustainable development**	1. Definition of sustainable development 2. Importance of sustainable development 3. Problems related to sustainable development	1. Identify the problem related to sustainable development in the community 2. Group discussion on the importance of respecting and conserving indigenous knowledge and cultural heritage 3. Discussion on the responsibilities and benefits of environmental citizenship, including the conservation and protection of environmental values 4. Preparing models on rain water harvesting, drip / sprinkler irrigation, vermicompost, solar energy, solar cooker, etc.	10
Total			**10**

Part B: Vocational Skills

S. No.	Units	Duration (Hrs.)
1	Stone and Brick Masonry	30
2	Scaffolding	25
3	Tiling, stone tiling and its laying	25
4	Floor and wall tiles and its laying	15
	Total	**95**

Unit 1: Stone and Brick Masonry

Learning Outcome	Theory (10 Hrs)	Practical (20 Hrs)	Duration (30 Hrs)
1. **State technical terms used in Brick Masonry**	1. Technical Terms used in Brick Masonry	1. Prepare a chart of terminology used in brick masonry	3
2. **Identify the different types of stone used**	1. Stone; its types and properties	1. Identification of different types of	5

for construction	2. Parts of stone 3. Dressing technique 4. Tools, equipment and materials used for dressing of stone	stone with its properties 2. Demonstration of tools and equipment to be used for dressing and quarrying. 3. Dressing of stones	
3. Identify the various types of masonry laying	1. Materials used for stone masonry work 2. Classification of stone masonry 3. Joints in stone masonry 4. Pattern of stone masonry	1. Identify the material required for stone masonry 2. Draw different pattern of stone masonry 3. Field visit for stone masonry work site	03
4. Demonstrate of the laying of brick and stone masonry	1. Method of laying stone masonry 2. Method of laying brick in wall above plinth level 3. Defects in brick work	1. Practice of laying brick and stone masonry 2. Demonstrate different types of closers and bond laying	03
5. Identify the different types of brick used for construction	1. Types of brick. 2. Properties of brick 3. Brick masonry work	1. Identification of different types of brick	02
6. Demonstrate the use of tools in brick masonry	1. Tools used in brick masonry	1. Demonstration of uses of tools used for dressing of bricks	02
7. Identify bonds used in brick masonry and demonstrate the construction of brick masonry	1. English bond 2. Flemish Bond 3. Procedure for construction of brick masonry 4. Precautions to be taken while performing layering	1. Stacking of bricks and counting of bricks 2. Demonstration and practice of the making of English and Flemish bond of one brick thick without mortar	02
8. Construct the laying of bricks	1. Method of laying brick in wall 9. Method of laying brick in wall above plinth level 10. Defects in brick work	1. Practice of laying brick in wall 2. Lay different types of closers 3. Demonstrate different types of brick bats.	7
9. Identify the defects in brick masonry	1. Defects in brickwork	1. Identify the defects	3

Unit 2: Scaffolding

Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)	Duration (25 Hrs)
1. Explain the various types of scaffolding used in construction work	1. Meaning and purpose of scaffolding 2. Material used in erection of scaffoldings 3. Types and Components	1. Identification of the components of scaffoldings 2. Draw the schematic drawing	5

	of scaffolding	of scaffolding for a multistoried building	
2. Identify types and Components of scaffolding	1. Type and Components of scaffolding 2. Spacing/ height to be provided among different components of a temporary scaffolding	1. Make a list of materials used in scaffoldings 2. Collect the drawing of various types of scaffoldings 3. Visit to the construction site and observe scaffoldings	**10**
3. Discuss the different materials used in scaffolding	1. Materials and its type used in scaffolding	1. Identification of materials used in scaffolding	**5**
4. Comprehend the latest norms to be followed while erecting scaffolding	1. Safety norms for erecting scaffolding	1. Demonstration of safety process to be followed 2. Making the drawing of safety equipment 3. Mock exercise for using safety equipment 4. Prepare a list of safety equipment	**5**

Unit 3: Tools related to masonry work

Learning Outcome	Theory (10 Hrs)	Practical (15 Hrs)	Duration (25 Hrs)
1. Identify the hand and power tools related to masonry work	1. Types of masonry tools 2. Uses of masonry tools	1. Identify tools used for masonry work 2. Draw sketch of masonry tools	**10**
2. Demonstrate handling of tools used for masonry work	1. Material used in handling of tools 2. Safety procedure during handling of tools	1. Demonstration of tools for proper handling 2, Cleaning of tools after use	**15**

Unit 4: Floor and wall tiles and its laying

Learning Outcome	Theory (05 Hrs)	Practical (10 Hrs)	Duration (15Hrs)
1. Identify the tiles used in construction work	1. Types of Tiles; floor and wall 2. Uses of tools for laying of tiles	1. Identify tools used for tiling work 2. Identification of types of floor and wall tiles	**03**

2. Demonstrate the use of tools for tiling work	1. Safety procedure during handling of tools/machine 2. Laying of tiles	1. Enlist different tools used for tile cutting and laying	03
3. Preparation of surface for fixing tile	1. Surface preparation technique for tile 2. Preparation of cement slurry material for laying of tiles 3. Laying and fixing of tiles	1. Prepare surface for fixing tile 2. Prepare joints for grouting	05
4. Supervise the tiling work	1. Rules of supervision 2. Properties of tile 3. Tiles manufacturing process	1. Checking the tile 2. Visit to site of tile work in the vicinity 3. Enlist safety measures during cutting of tile	04

6. ORGANISATION OF FIELD VISITS

In a year, at least 3 field visits/educational tours should be organised for the students to expose them to the activities in the workplace.

Visit a construction site and observe the following: Location, Site, construction site, Office building, newly constructed site. Building store, construction site. During the visit, students should obtain the following information from the owner or the supervisor of the construction site:

1. Construction activity being taken
2. Residential/Commercial project
3. Technology adopted
4. Type of material used
5. Sale procedure
6. Manpower engaged
7. Total expenditure of project
8. Total annual income
9. Profit/Loss (Annual)
10. Any other information

7. LIST OF EQUIPMENT AND MATERIALS

The list given below is suggestive and an exhaustive list should be prepared by the vocational teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

1. Bricks

2. Stone
3. Sand
4. Concrete block
5. Cement
6. Water
7. Trowel
8. Plumb rule and Bob
9. Spirit level
10. Square
11. Line and pins
12. Bolster
13. Brick hammer
14. Scutch
15. Pick Axe
16. Crowbar
17. Chisel
18. Mash Hammer
19. Boaster
20. Spall Hammer
21. Scrabbling Hammer
22. Bevel
23. Spade
24. Picks and Beaters
25. Wooden Float
26. Metal Float
27. Floating Rule
28. Racking Needle
29. Hacking tool
30. Scratcher
31. Spade
32. Trowel (Khurpi)

8. TEACHER'S/TRAINER'S QUALIFICATION

Qualification and other requirements for appointment of vocational teachers/trainers on contractual basis should be decided by the State/UT. The suggestive qualifications and minimum competencies for the vocational teacher should be as follows:

S.No.	Qualification	Minimum Competencies	Age Limit
1.	B.Tech in Civil Engineering from a recognized Institute /University, with at least 1 year work / teaching experience Or Diploma in Civil engineering with 2 year work / teaching experience	• Effective communication skills (oral and written) • Basic computing skills.	18-37 years (as on Jan. 01 (year)) Age relaxation to be provided as per Govt. rules.

Vocational Teachers/Trainers form the backbone of Vocational Education being imparted as an integral part of Rashtriya Madhyamik Shiksha *Abhiyan* (RMSA). They are directly involved in teaching of vocational subjects and also serve as a link between the industry and the schools for arranging industry visits, On-the-Job Training (OJT) and placement.

These guidelines have been prepared with an aim to help and guide the States in engaging quality Vocational Teachers/Trainers in the schools. Various parameters that need to be looked into while engaging the Vocational Teachers/Trainers are mode and procedure of selection of Vocational Teachers/Trainers, Educational Qualifications, Industry Experience, and Certification/Accreditation.

The State may engage Vocational Teachers/Trainers in schools approved under the component of Vocationalisation of Secondary and Higher Secondary Education under RMSA in the following ways:

(i)   directly as per the prescribed qualifications and industry experience suggested by the PSS Central Institute of Vocational Education(PSSCIVE), NCERT or the respective Sector Skill Council(SSC)

        OR

(ii)   Through accredited Vocational Training Providers accredited under the National Quality Assurance Framework (NQAF*) approved by the National Skill Qualification Committee on 21.07.2016. If the State is engaging Vocational Teachers/Trainers through the Vocational Training Provider (VTP), it should ensure that VTP should have been accredited at NQAF Level 2 or higher.

    *   *The National Quality Assurance Framework (NQAF) provides the benchmarks or quality criteria which the different organisations involved in education and training must meet in order to be accredited by competent bodies to provide government-funded education and training/skills activities. This is applicable to all organizations offering NSQF-compliant qualifications.*

The educational qualifications required for being a Vocational Teacher/Trainer for a particular job role are clearly mentioned in the curriculum for the particular NSQF compliant job role. The State should ensure that teachers / trainers deployed in the schools have relevant technical competencies for the NSQF qualification being delivered. The Vocational Teachers/Trainers preferably should be certified by the concerned Sector Skill Council for the particular Qualification Pack/Job role which he will be teaching. Copies of relevant certificates and/or record of experience of the teacher/trainer in the industry should be kept as record.

To ensure the quality of the Vocational Teachers/Trainers, the State should ensure that a standardized procedure for selection of Vocational Teachers/Trainers is followed. The selection procedure should consist of the following:

(i)   Written test for the technical/domain specific knowledge related to the sector;
(ii)   Interview for assessing the knowledge, interests and aptitude of trainer through a panel of experts from the field and state representatives; and
(iii)   Practical test/mock test in classroom/workshop/laboratory.

In case of appointment through VTPs, the selection may be done based on the above procedure by a committee having representatives of both the State Government and the VTP.

The State should ensure that the Vocational Teachers/ Trainers who are recruited should undergo induction training of 20 days for understanding the scheme, NSQF framework and Vocational Pedagogy before being deployed in the schools.

The State should ensure that the existing trainers undergo in-service training of 5 days every year to make them aware of the relevant and new techniques/approaches in their sector and understand the latest trends and policy reforms in vocational education.

The Head Master/Principal of the school where the scheme is being implemented should facilitate and ensure that the Vocational Teachers/Trainers:

(i)   Prepare session plans and deliver sessions which have a clear and relevant purpose and which engage the students;
(ii)   Deliver education and training activities to students, based on the curriculum to achieve the learning outcomes;
(iii)   Make effective use of learning aids and ICT tools during the classroom sessions;
(iv)   Engage students in learning activities, which include a mix of different methodologies, such as project based work, team work, practical and simulation based learning experiences;
(v)   Work with the institution's management to organise skill demonstrations, site visits, on-job trainings, and presentations for students in cooperation with industry, enterprises and other workplaces;
(vi)   Identify the weaknesses of students and assist them in up-gradation of competency;
(vii) Cater to different learning styles and level of ability of students;
(viii) Assess the learning needs and abilities, when working with students with different abilities
(ix)   Identify any additional support the student may need and help to make special arrangements for that support;
(x)   Provide placement assistance

Assessment and evaluation of Vocational Teachers/Trainers is very critical for making them aware of their performance and for suggesting corrective actions. The States/UTs should ensure that the performance of the Vocational Teachers/Trainers is appraised annually. Performance based appraisal in relation to certain pre-established criteria and objectives should be done periodically to ensure the quality of the Vocational Teachers/Trainers. Following parameters may be considered during the appraisal process:

1.   Participation in guidance and counselling activities conducted at Institutional, District and State level;
2.   Adoption of innovative teaching and training methods;
3.   Improvement in result of vocational students of Class X or Class XII;
4.   Continuous up-gradation of knowledge and skills related to the vocational pedagogy, communication skills and vocational subject;
5.   Membership of professional society at District, State, Regional, National and International level;

6. Development of teaching-learning materials in the subject area;
7. Efforts made in developing linkages with the Industry/Establishments;
8. Efforts made towards involving the local community in Vocational Education
9. Publication of papers in National and International Journals;
10. Organisation of activities for promotion of vocational subjects;
11. Involvement in placement of students/student support services.

9. LIST OF CONTRIBUTORS

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