

***Report of the Workshop on Industry Linked Programme
Development***

Organized by:

**National Institute of Open Schooling (NIOS)
in Collaboration With Commonwealth Educational
Media Centre for Asia (CEMCA)**

The workshop started with welcome address by Ms. Shivali Chawla, Academic Officer, NIOS. Dr. S.S Jena, Chairman NIOS, delivered the inaugural address and thanks CEMCA for this collaborative project. Mr. R. Thyagarajan, Head, Administration and Finance, Cemca informed the participant's about the role of Commonwealth Educational Media Centre for Asia, and expressed full support of CEMCA for this activity.

Dr. S.S. Jena, Chairman, NIOS informed the participant's about the role of NIOS in delivering skill based education to various sections of the society. He further informed the participants about the National Skill Development Agency and setting up of NSDC to meet the goal of skilling 500 million people nationwide by the end of 2020. In this endeavor, NIOS and CEMCA have made efforts to offer a vocational programme for Sound Designers. It was suggested by him that this course should be developed in a modular manner allowing learners with multiple entry and exit Opportunities.

This was followed by a round of self-introduction by all the participants.

After that Dr. Manju Gupta, Dy. Director, VE introduced the participants about the Vocational Education at NIOS. She briefed the various areas in which vocational programmes are being offered such as Agriculture, Business and Commerce, Home science, Health and Paramedical, IT, Engineering and Technology, etc.



This was followed by a presentation on Self Learning Materials and orientation about the National Occupational Standards and Qualification Packs by Ms. Shivali Chawla. In this presentation target group of NIOS, eligibility criteria, expected time-frame for writing lessons etc. was duly explained to the

participants.

After that Ms. Sonal Mathur, Project Director from Media and Entertainment Sector Skill council (MESC) briefed the participants about the Qualifications Packs being vetted by the various industry experts and asked the participants to provide their inputs on the same being the academicians of this field. Therefore each of the participants validated the Qualifications Packs developed by MESC.

After lunch break, session started with a discussion on exact pathway to be offered to the learner who is interested to take up these job roles. Keeping in view the target group, it was agreed by all that NIOS should offer basic level course for **Sound Assistants** first followed by **Sound Engineer** and **Sound Designer**. This programme is being developed in modular level with multiple entry and exit norms wherein structure proposed is:

Eligibility: 10th Pass with Maths and Science

Module 1	Certificate in Sound Assistant (Compulsory)	6 months
Module 2	Certificate in Sound Engineer	6 months
	or	
Module 3	Certificate in Sound Designing	

Note:

- i. For Candidates desiring to have direct entry for Module 2, Eligibility condition would be 12th Pass with Physics and Maths or Certificate in Sound Assistant with 2+ years of experience in the field
- ii. For Candidates desiring to have direct entry for Module 3, Eligibility condition would be 12th Pass with Physics and Maths or Certificate in Sound Engineer with 2+ years of experience in the field.

Therefore it was decided to prepare curriculum for all three job roles and hence curriculum detailing for the job role of Sound Assistant started. Detailed curriculum for theory and practical along-with decided eligibility is annexed at *Annexure A*.



On Day two, curriculum for Sound Engineer and Sound Designer was discussed in detail and theory with practical part was decided which is annexed at *Annexure B and C*. Along with this lesson writing format for NIOS learners was shared with the participants.

Day three witnessed the discussion on fees for offering the three courses and preparation of final infrastructure norms for the course on Sound Designer. Dr. Mamta Srivastava suggested the participants to provide details on each group of devices so as to specify and ensure their availability. Prepared list of infrastructure norms are annexed at *Annexure D*. In context of fees, it was suggested by experts and Ms. Sonal Mathur that NIOS should offer these courses at such a viable model whereby only interested persons should come to offer them. Suggested Fees by the experts was in the range of Rs. 15,000 for sound assistant and Rs. 25,000 for Sound Engineer and Sound Designer each.



Ms. Shivali Chawla suggested that keeping in view the target groups of NIOS and its mandate such high level of fees will discourage enrolment of learners especially from non-metro cities and rural areas. Participants suggested that keeping in view the cost of infrastructure and maintenance cost involved this level of fees is

not much high.

Dr. Mamta Srivastava suggested arriving at viable fee model by ascertaining the various costs involved in offering this course such as payment to faculty, infrastructure cost, etc.

After Lunch session, preferences of participants were asked to take up lessons from Sound Designing for writing of lesson followed by a presentation by Ms. Shivali on "Societal concerns in writing - biases and stereotypes" and copyright issues were discussed. This was followed by a discussion on launching strategy for these courses and participants came out with some suggestions:

Possible study centres

- 250 centres of AIR all over India with present or retired Professionals (last 3 yrs.) as faculty having knowledge of latest equipment
- EMRC's
- University Mass Comm centres
- Private audio studios
- Local cable channels
- Community Radio stations
- Audio unit of Doordarshan (every state has approx. 3 or 4)

Tapping the above list and private institutions that can run these courses on weekend basis in their existing media related infrastructure would make it feasible to offer NIOS courses at lower fee to the candidates.

After this vote of thanks was proposed by Ms. Shivali Chawla to NIOS and CEMCA for initiating this project and venturing into the sector Media and Entertainment as per the qualifications packs provided by the NSDC and to all the participants for their diligent efforts made in these three days.

Sound Assistant/Sound technician/Boom Operator

Eligibility: 10th Pass with Maths & Science

Job role: To set up or disassemble sound equipment and capture sound with the optimum quality for production

L-1 Introduction: Introduction to sound, Basics of Sound: Elements of sound - nature, features & characteristics of sound

L-2 Principles of sound, Propagation, Refraction, reflection, transmission, absorption of sound

L-3 Measurement of Sound – units of sound i.e. decibels and their usage, dynamic range, sound pressure level (SPL)

L-4 Acoustics – Introduction, reverberation, sound isolation, noise level, basics of psychoacoustics

L-5 Fundamentals of sound technology: Analog & digital signals, Converters- converting analog to digital, vice versa

L-6 Basics of Electronics related to sound and sound equipments: voltage, current, Interference, earthing problems, carry out adjustments

Practical

L-7 Microphones - types, classification, polar pattern (uni, bi, omni), use of microphones- safety measures (do's & don't's)

L-8 Loudspeakers – types (Active, Passive), classification and Headphones - Classification

L-9 Amplifiers & their types

L-10 Audio Consoles: Types - Analog, Digital, Purpose, Block diagram (I/O signal path), features, facilities, Visual and Aural monitoring

L-11 Audio players, recording and playback equipment

L-12 Installing & disassembling sound equipments , Operating and Managing Sound equipments , requirement of power for sound , placements of power fitting and techniques of safe testing of sound equipments – sound checks

L-13 Health & Safety considerations

Recording in different environment/Capturing Sound:

L-14 Production Types- indoor, Outdoor, Speech, Music, Live Music

L-15 Qualities of professional sound recording – concept of frequency response distortion, noise, signal to noise ratio (SNR), dynamic range etc.

SOUND DESIGNER

Eligibility: 12th Pass with Physics & Mathematics

Or

Certificate in Sound Engineer

Theory

L-1 Introduction to sound: Basics of sound-characteristics, principles, features, propagation, frequency range, dynamic range, **auditory perception, Measuring units:** – units of sound i.e. decibels and their usage, dynamic range, Sound pressure & sound power level (SPL) ,

L-2 Sound Concepts – Indian Music (Hindustani Classical, Carnatic, folk, regional, etc.), western music (rock, pop, jazz, etc.). Sound Concepts – A group of sounds associated with different parameters like emotions (happy, sad, etc.), environments (office, factory, etc.), situations (horror, comedy, etc.), moods (pleasant, sorrow, suspense, etc.), etc.

L-3 Acoustics: reflection & refraction, absorption, transmission, Principles of sound acoustics, psychoacoustics – threshold of hearing and pain

L-4 Microphones– basis of classification, sound generating elements- condenser, microphone dynamic microphone, polar pattern (pick up Pattern- omni directional, bidirectional, unidirectional-cardioid, supercardioid, hypercardioid), impedance level (low & high), sensitivity, proximity effect, microphone feedback, multiple microphone interference, stereo miking techniques, mic accessories and proper usage, specialized microphones - lapel, cordless, lavalier, shot gun, FM microphone, RC microphone, Frequency response of microphones- safety measures (do's & don'ts).

L-5 Loudspeakers – Types (Active, Passive), speaker system design, speaker sound qualities and placement, phase, sensitivity, headphones, cordless headphones, Classification of headphones.

L-6 Amplifiers & their types (pre amplifiers, audio amplifiers, power amplifier), frequency response, distortion (THD), SNR.

L-7 Playback and recording equipment: turn table, gramophone records, Audio tape recorder, CDs, CD recorder, DVDs, HDBR and playback system.

L-8 Analog v/s Digital: Advantages of digital over analog technology.

L-9 Recorders – Analog audio tape recorder (open reel), head functions and arrangement, select sync, speeds, counters and timers, tape transport mechanism, tape recorder electronics, cross talk and compatibility, cartridge tape recorder, cassette type tape recorder and maintenance. Digital Audio Tape (DAT) recorders and Hard disk based Recording system (DAW) and maintenance issues

L-10 Audio Consoles: Types - Analog, Digital, functions of consoles, input selectors, input gain control, output selectors, output gain control, frequency response and equalization, tone generator, Cue, Monitoring - Visual and Aural monitoring, additional facilities, timer counter.

L-11 Signal Processing: equalizers, filters, noise reduction systems, reverberation generators, digital delay, compressor, expander, compander, multi effect processors, flanger, Desser, stereo synthesis.

L-12 Digital studio: Digital cart machines, mini disk, data compression, Digital audio Editor, digital audio workstation, advantages and disadvantages of digital production studio over analog production studio.

L- 13 Editing: reasons for editing, tools of trade, edit points, splicing techniques, dubbing, digital audio editing (DAW based) Qualities of good sound recording – frequency response, noise level, THD, SNR and testing equipment.

L- 14 Multi-track production techniques: Multi-track recorders, overdubbing, punching in tracks, bouncing tracks, track sheet, mixing two stereo & mono

compatibility, voice doubling, chorus and stacking, dovetailing, slap back, echo, digital multi track.

L- 15 Health & Safety considerations: guidelines, electronic disposal mechanism, **safety measures (do's & don't's)**

Practical
Recording of sound at a studio

L- 1 Budgeting & Costing - estimated cost of procurement; Copyright Norms – Introduction, how to copyright your content, existing norms, legal implications

L-2 Creation of Sound: different types- primary & secondary; Creation of Sound: Techniques (natural and technically created sound), treatments (signal Processing) Materials required to create sound – natural elements (wood, glass, metal, etc.) synthetic, pre-recorded, etc.

L-3 Manipulation of different sound sources: microphones, online free libraries, tape recorders, sound tracks etc. Sound Monitoring: Present Industry standards and quality

L-4 Operating diff. types of sound equipment- microphones, amplifiers, recording media, audio console, speakers, converters; Recording & mixing techniques; troubleshooting

L- 5 Mastering: mono, stereo & surround sound, differences between different types of playback; Sound finalization: techniques for cleaning–noise reduction, synchronization, basic mixing and sound effects; Preparation of final product: formats, meeting the production requirements

Sound Engineer

Eligibility: 12th Pass with Physics & Maths

Or

Certificate in Sound Assistant

Syllabus

L-1 Introduction to sound: Characteristics of Sound wave and its propagation, reflection, refraction, absorption, transmission, frequency range and dynamic range of sound signals

L-2 Aspects of Sound: Echo, R.T., Decibels Distortions, noise levels, S/N ratio (SNR)

L-3 Cables, Connectors and Accessories - hard wiring and patching, RCA connectors, phono and miniphono connectors, XLR connectors, impedance, connector adapters, balanced and unbalanced lines, studio timers, degaussers, copy holder, cleaning material, jewel box, record sleeves, telephone interface

L-4 Studio acoustics: principles of sound acoustics, psychoacoustics – threshold of hearing and pain

L-5 Introduction to analog and digital signals : Analog and digital sound signals, conversion from analog to digital and vice versa, analog v/s digital , advantages of digital over analog signal; Introduction to digital sound theory, process software and equipment, and application

L-6 Playback and recording equipment : turn table , gramophone records , audio tape recorder, CDs, CD player, CD recorder, DVDs, hard disk based recording and playback systems

L-7 Microphones – basis of classification , sound generating elements- condenser, microphone dynamic microphone, polar pattern (pick up Pattern-

omni directional, bidirectional, unidirectional-cardioid, supercardioid, hypercardioid), impedance level (low & high), sensitivity, proximity effect, microphone feedback, multiple microphone interference, stereo micing techniques, mike accessories and proper usage , specialized microphones-lapel, cordless, lavalier, shot gun, FM microphone, RC microphone, Frequency response of microphones-safety measures (do's & dont's)

L-8 Loudspeakers – Types (Active, Passive), speaker system design, speaker sound qualities and placement, phase, sensitivity, headphones, cordless headphones, Classification of headphones

L-9 Amplifiers - types (pre amplifiers, audio amplifiers, power amplifier), frequency response, distortion (THD), SNR

L-10 Recorders – Analog audio tape recorder (open reel), head functions and arrangement, select sync, speeds, counters and timers, tape transport mechanism, tape recorder electronics, cross talk and compatibility, cartridge tape recorder, cassette type tape recorder and maintenance. Digital Audio Tape (DAT) recorders and Hard disk based Recording system (DAW) and maintenance issues.

L-11 Audio Consoles: Types - Analog, Digital, functions of consoles, input selectors, input gain control, output selectors, output gain control, frequency response and equalization, tone generator, Cue, Monitoring-Visual and Aural monitoring, additional facilities, timer counter

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L-13 Digital production studio: Digital cart machines, mini disk, data compression, Digital audio Editor, digital audio workstation, advantages and disadvantages of digital production studio over analog production studio.

L-14 Multi-track production techniques: Multi-track recorders, overdubbing, punching in tracks, bouncing tracks, track sheet, mixing two stereo mono compatibility, voice doubling, chorus and stacking, dovetailing, slap back, echo, digital multi track.

L-15 Editing : physical make up & dimensions of tape, reasons for editing, tools of trade, edit points, splicing techniques, dubbing, digital audio editing

L-16 Qualities of good sound recording – frequency response, noise level, THD, SNR and testing equipment

L-17 Sound safety, erasing, dope sheet, storage and storage devices- inch tapes, hard disks

L-18 Health & Safety considerations

Infrastructure Norms**Certificate in Sound Designing**

The institution having the following requisite infrastructure may apply for accreditation

A. Classroom: Class room for 25 students (min. area 250 sq. ft.) should have proper ventilation, well-illuminated black board and availability of adequate furniture and ceiling fans.

B. Studio: Studio area at least 200 sq. ft. with the control room of 100 sq. ft. With proper sound proofing or acoustics treatment along with three phase power supply for AC, lighting and audio equipment separately and facility of power back up

Tools and Equipment

<u>Items</u>	<u>Quantity</u>
Microphone – Condenser (with switchable polar pattern)	2
Dynamic	2
Audio Interface	1
Audio Console (mixer) [Digital\Analog] 16 channels : 4 buses : 2 outputs	1
Studio Monitors	1 pair (near field)
Headphones	3
DAW (Digital Audio Workstation) Audio editing systems with multi track software (protools , nuendo, sound forge)	1
Storage : minimum 1TB	
Expander	1
Compressor	1
Limiter	1
Headphone amplifier	1
Audio tape recorder (DAT)	1
CD player and recorder	1
Hard disk recorder	1
Patch bays(basic)	1
Cables & accessories ;	as per studio size
Connectors i.e. XLR , TRS, TS, RCA,	5 each
UPS to provide back up for above setup	1 unit

C. Physical facilities: The institution should have the facilities for drinking water, bathrooms & toilets.

D. Library: Library should have a min. of 25 books/articles/magazines etc. related to the subject.

E. Faculty:

Faculty & Supporting staff	Educational/professional qualification	No.
Coordinator		1
Instructor/Faculty	Degree/Diploma in sound engineering /sound designing with minimum two yrs of experience, OR Masters in Journalism & Mass Communication with minimum of 3 yrs. of experience in related field, OR A professional with related industry (Sound/Engineering) experience not less than 10 yrs	2
Studio assistant	Diploma in sound Recording/Engineering or Certificate in Sound engineering or 12 th Pass with 3 yrs. of experience in Sound Engineering/ recording	1
Receptionist cum clerk	Relevant to job	1
Assistant	Relevant to job	1

F. Batch Size: Maximum 25 students in a batch