



सत्यमेव जयते

**Guidelines for setting up of Tinkering Laboratories
under Atal Innovation Mission –
'Atal Tinkering Laboratories'**

Government of India
NITI Aayog
Atal Innovation Mission

May 2016

**Government of India
NITI AAYOG
Atal Innovation Mission**

GUIDELINES FOR SETTING UP OF ATAL TINKERING LABORATORIES (ATL)

1.0 Background

- 1.1. The Government of India has setup the Atal Innovation Mission (AIM) at NITI Aayog. Realising the need to create scientific temper and cultivate the spirit of curiosity and innovation among young minds, AIM proposes to support establishment of a network of Atal Tinkering Laboratories (ATL). ATL is a work space where young minds can give shape to their ideas through hands on do-it-yourself mode and learn innovation skills. The vision is to 'Cultivate 1 Million children in India as Neoteric¹ Innovators'.

2.0 Objectives

- 2.1. The objective of this scheme is to foster curiosity, creativity and imagination in young minds and inculcate skills such as design mind-set, computational thinking, adaptive learning, physical computing etc. Young children will get a chance to work with tools and equipment to understand what, how and why aspects of STEM (Science, Technology, Engineering and Math).

3.0 Features of Scheme

- 3.1. ATLs can be established in schools (Grade VI – XII) managed by Government, local body or private trusts/society.
- 3.2. Minimum 25% of the ATLs would be set up in schools managed by Government (Central / States)

4.0 Funding Support

- 4.1. The applicant schools would be provided financial support in the form of Grant-in-aid for a maximum period of 5 years.
- 4.2. Key aspects of funding ATLs in schools:
- a) One time establishment charge of up to Rs. 10.0 lakh would be provided for each ATL in the first year for instruments, equipment like do-it-yourself kits, 3D printer, etc. An illustrative list of equipment and kits is at Annex IV. A checklist of mandatory equipment and other infrastructure would be communicated to selected schools. The schools will procure equipment and kits at their end, however the AIM will fix their rates.
 - b) An amount of Rs. 10.0 lakh would be provided for each ATL over a maximum period of 5 years for operation of ATLs, maintenance of equipment, purchase of

¹ Neoteric means a person who advocates new ideas

consumables, organising popular science lecture series and other scientific activities, competitions and payment of honorariums to the faculty and mentors involved.

- 4.3. Contributions from philanthropic and other institutions and under Corporate Social Responsibility (CSR) would be encouraged for financing / upgrading ATLs. Local Industry / Institution will be encouraged to support the initiative by creating subject/domain specific exhibits/tinkering laboratory facilities.

5.0 Infrastructure

- 5.1. The applicant school would have to provide at least 1,500 sq. ft. of built up space. The existing facilities for meeting rooms and video conferencing among others can be used to supplement the laboratory space.

- 6.0 The program of establishment of ATLs across the country would be handled by a National Coordinator (NC) in AIM Directorate.

- 7.0 Applicant schools intending to establish ATLs may visit <http://www.niti.gov.in> and submit their application online to the Atal Innovation Mission, NITI Aayog. The prescribed application formats are at Annex III. Necessary documents can also be uploaded online.

- 8.0 The applications would be evaluated based on Selection Criteria (Annex II).

- 9.0 Short listed schools will be invited to participate in an Innovation Contest which will be informed by AIM. Each school will form groups of maximum 3 students and send one entry for the contest. The entries will be judged on the basis of following parameters:

- a. Novelty of innovation in identified areas
- b. Clarity of expression
- c. Demonstration
- d. Potential impact

- 10.0 Teams of top 3 entries will be given an opportunity to participate in Intel Science and Engineering Fair.

- 11.0 Selected Schools will be required to enter into a Memorandum of Understanding (MoU) (Annex V) and Bond (Annex VI) with AIM Directorate.

- 12.0 The above Scheme and guidelines are subject to periodic review in consultation with stakeholders.

- 13.0 The Terms and conditions of the scheme are in Annex I.

TERMS & CONDITIONS

1. The purpose of this document is to provide information to the interested applicants for the submission of their application form. It is neither an agreement nor an offer made by AIM.
2. All communications related to the scheme including announcements of shortlisted applicants and final selection of applicants will be published on the NITI Aayog website.
3. AIM does not make any representation or warranty as to the accuracy; reliability or completeness of the information in this document and it is not possible to consider particular needs of each applicant.
4. No applicant shall submit more than one application.
5. The issue of these guidelines does not imply that AIM is bound to select an applicant. AIM reserves the right to accept/reject any or all of proposals submitted in response to the document at any stage without assigning any reasons whatsoever.
6. AIM's decision will be final and no explanation or justification for any aspect of the selection process will be given.
7. Applicants shall bear all costs associated with the preparation and submission of their proposals, and their participation in the selection process.
8. Applicants may seek clarification on the guidelines within five days from the date of issue of guidelines. Any request for clarification must be emailed to md-aim@gov.in.
9. Applicant schools would be required to put in place the requisite physical infrastructure such as laboratory and workshop facilities, computer lab with internet within a period of 6 months from the date of release of funds. Other desirable facilities including meeting room and video conferencing facility to chat with experts in real time can also be set up by the schools, if possible.
10. ATL would contain educational and learning 'do it yourself' kits and equipment on – science, electronics, robotics, open source microcontroller boards, sensors and 3D printers etc. An illustrative list of equipment and kits is described in Annex IV. This list shall be updated regularly. The schools are also free to purchase any other equipment or kit, if required.
11. The timings of ATL should be such that it allows students to come after working hours of the host institution (Applicant) to experiment and tinker. During working hours, specific time periods can be defined and included in the curricula of different grades to introduce the concept of tinkering laboratories.
12. Applicant schools would be required to identify and appoint adequate number of faculty members who would be responsible for managing the day-to-day operations of the laboratory.

13. ATL would also put in place mentors/volunteers for hand-holding and guidance in either an online or face-to-face environment.
14. ATL should develop network with industries, academia, research, civil society for knowledge sharing and mentoring support.
15. The faculty would ensure safety of the students during the working hours of ATL.
16. In order to foster inventiveness among students, the following activities could be conducted by ATL:
 - a) Monthly programs to teach and explain students about different concepts – ranging from ideation, design, proto-typing, networking to physical computing.
 - b) Periodic regional and national level competitions.
 - c) Periodic exhibitions / fairs / carnivals.
 - d) Workshops on problem solving, designing and fabrication of products.
 - e) Interactions with relevant stakeholders including industry, academia and students from other schools and colleges and universities.
 - f) Screening of films and organising popular STEM and entrepreneurship talks by reputed speakers.
 - g) Summer and winter camps.
17. Operation of the ATL would be monitored on a suitable periodic basis by an advisory body comprising of following suggested members:
 - a) Principal of the school – Chairman
 - b) Faculty in-charge of the ATL – Convenor
 - c) Representative from local industry / local community /young innovators / reputed academia / alumni – Three Members
18. The advisory body will be constituted by the applicant school. It will meet at least thrice in a year and send its report to AIM Directorate.
19. The applicant school will maintain separate accounts for the grant and contributions received from other sources. The funds released should be kept in a bank account earning interest; the interest earned should be reported to the AIM, NITI Aayog and the same will be treated as a credit to the organization and will be adjusted towards further instalments of the grant, if any.
20. The grant being released should be exclusively spent on the specified purpose for which it has been sanctioned within the stipulated time. Any unspent balance out of the amount sanctioned should be refunded to the Government of India by means of an Account's Payee Demand Draft drawn in favour of Drawing and Disbursing Officer, NITI Aayog, payable at New Delhi.
21. The advisory body of the ATL is required to upload each of i) annual implementation report providing information on the activities conducted; and ii) Utilization Certificate (Annex VII) of the GOI Grant, in the prescribed pro-forma, to Atal Innovation Mission,

NITI Aayog at the end of each financial year as well as at the time of seeking further instalments of the grant, if any.

22. Concerned officers of Atal Innovation Mission, NITI Aayog or its authorised representatives may visit the ATL periodically for ascertaining the progress of work and resolving any difficulties that might be encountered in the course of implementation.
23. AIM, NITI Aayog reserves the right to terminate support to the project at any stage, if it is convinced that the grant is not being utilised properly or that appropriate progress in the project work is not being made.
24. The brand name 'Atal Tinkering Laboratories' will be withdrawn in case of non-performance of these laboratories.
25. In case of any dispute, the same shall be subject to the jurisdiction of the court of Delhi.

SELECTION CRITERIA

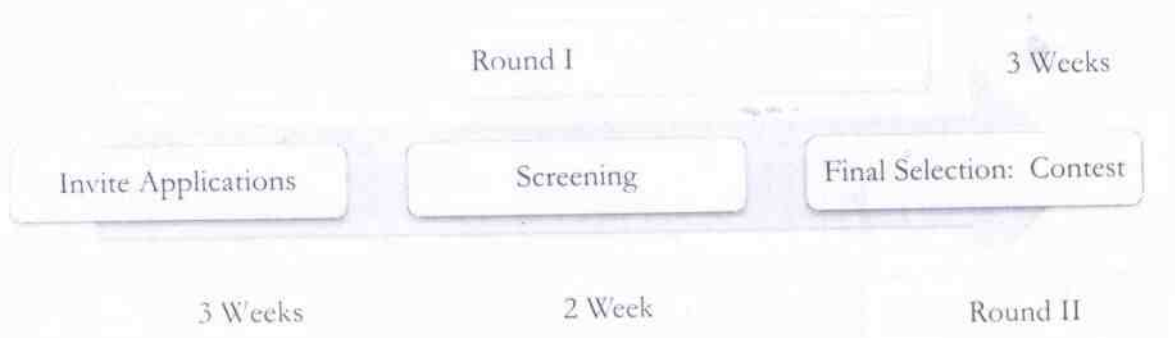
1. Applications will be solicited from eligible schools to establish ATL.
2. The eligibility criteria for schools are:

Criteria	Parameters
Infrastructure	<ul style="list-style-type: none"> • All weather area (1,500 sq. ft.) • Functional computer with internet facility • Electricity connection
Faculty	<ul style="list-style-type: none"> • Dedicated & qualified staff: Maths & Sciences
Reach	<ul style="list-style-type: none"> • Enrolment – Min. 400 students in Grade VI – XII • Regular attendance of 75% & above of the staff & enrolled students over the past 3 years

3. The parameters to be used for screening of schools are:

Criteria	Parameters
Performance of Students	<ul style="list-style-type: none"> • % of students scoring 70 – 80% in Grade X & XII board exams in previous 3 years • % of students scoring 80 – 90% in Grade X & XII board exams previous 3 years • % of students scoring 90% and above in Grade X & XII board exams in previous 3 years • Participation of school in science-related activities at district, state and national level
Reach	<ul style="list-style-type: none"> • Total enrolment of students in Grade VI – XII
Implementation Plan	<ul style="list-style-type: none"> • Activity plan • Linkages to mentors • Plan to tap private sector / CSR funding for sustaining operations & funding ATL • Difference ATL would bring to learning process for children

4. Selection Process Time lines:



FORMAT OF APPLICATION FORM FOR SETTING UP OF ATAL TINKERING LABORATORIES (ATL)

1. Name of school		2. Type of school <input type="checkbox"/> Government <input type="checkbox"/> Private-aided <input type="checkbox"/> Local Body <input type="checkbox"/> Private-unaided	
3. Maximum education grade offered <input type="checkbox"/> Upper Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Higher Secondary		4. Type of funding <input type="checkbox"/> Government <input type="checkbox"/> Private	
5. Address of school			
6. State		7. District	
8. Board of affiliation: (ICSE, CBSE, SSC etc.) <input type="checkbox"/> CBSE <input type="checkbox"/> ISCE <input type="checkbox"/> State Board			
9. Whether dedicated area for ATL is greater than or equal to 1,500 sq. ft. <input type="checkbox"/> Yes <input type="checkbox"/> No			
10. Number of students from Grade VI - XII:			
11. Is the attendance of staff and enrolled students above 75% for the past three years <input type="checkbox"/> Yes <input type="checkbox"/> No			
12. Percentage of students (Grade X & XII) obtaining the following scores in board exams in the previous 3 years :			
	2013 - 14	2014 - 15	2015 - 16
70-80% :	_____	_____	_____
80-90% :	_____	_____	_____
90-100% :	_____	_____	_____

13. Other parameters	Yes	No
Steady electricity connection	<input type="checkbox"/>	<input type="checkbox"/>
Minimum one functional computer with internet connection	<input type="checkbox"/>	<input type="checkbox"/>
Gathering capacity of more than 30 students at any point	<input type="checkbox"/>	<input type="checkbox"/>
Dedicated staff for:		
a) Mathematics	<input type="checkbox"/>	<input type="checkbox"/>
b) Science	<input type="checkbox"/>	<input type="checkbox"/>

14. Other facilities available			
<input type="checkbox"/> Computer Lab	<input type="checkbox"/> Science Lab	<input type="checkbox"/> Library	<input type="checkbox"/> Playground

15. How will you encourage innovation after establishment of ATL in your school? (500 Words) (Your action plan should include details on activities planned, utilisation plan of the lab, linkages to mentors and plan to tap funding from other sources. Also, elaborate

on the qualifications and the involvement of the Principal and faculty-in-charge in innovation related activities)

16. Is your school involved in any kind of science and technology related activities? Elaborate. Do you have any notable alumni in the field?

[National Talent Search Examination (NTSE), Junior Science Talent Search Examination (JSTS), National Science Olympiad (NSO), Kishore Vaigyanik Protsahan Yojana (KVPY) etc.] (200 Words)

17. Any other relevant information? (200 Words)

**ILLUSTRATIVE LIST OF EQUIPMENT AND KITS IN ATAL TINKERING
LABORATORIES (ATL)**

No	Category	Type	Name	Quantity	Description
1	Rapid Prototyping Tools	Equipment	3D Printer Kit and tools	1	1.75 mm PLA Printer, With 180mm ×200mm ×160mm Build Volume, Spatula, Tweezers, Cutter, Screwdriver, Wrench etc.
2	Rapid Prototyping Tools	Consumables	Consumables		Set of Arts & Crafts Accessories
3	Electronics Development	Equipment	Intel Galileo, Genuino & Edison	5	
4	Electronics Development	Equipment	Arduino Uno Boards	10	
5	Electronics Development	Equipment	Breadboards & Mini Breadboard	8	Solder less 400 points and 800 points (8 of each), Self-adhesive proto shield
6	Electronics Development	Equipment	General Purpose Board	30	30 boards of each size of A1,A2 and A3
7	Electronics Development	Equipment	USB Cables	10	USB Cable Set (A to B)
8	Electronics Development	Consumables	Multiple	15	9 Volt battery, multiple resistors and capacitors for electronic projects (various sizes)
9	Internet of Things & Sensors	Equipment	IR Sensors	50	
10	Internet of Things & Sensors	Equipment	Triple Axis Magnetometer Breakout - HMC5883L	5	
11	Internet of Things & Sensors	Equipment	Humidity Sensor	5	
12	Internet of Things & Sensors	Equipment	MQ-4 Natural Gas sensor	5	
13	Internet of	Equipment	TSOP 1738	5	

	Things & Sensors				
14	Internet of Things & Sensors	Equipment	Ultrasonic Sensor Module HC-SR-04	5	
15	Internet of Things & Sensors	Equipment	ADXL335	5	
16	Internet of Things & Sensors	Equipment	PIR Motion Detector Module	5	
17	Internet of Things & Sensors	Equipment	CMOS IR Camera Module - 728x488	3	
18	Internet of Things & Sensors	Equipment	RFID Reader - Tags	5	
19	Internet of Things & Sensors	Equipment	RF Modules Tx & Rx 315 MHz ASK	5	
20	Internet of Things & Sensors	Equipment	Zig-bee	10	
21	Internet of Things & Sensors	Equipment	GSM Module	2	
22	Internet of Things & Sensors	Equipment	Voice Recognition	2	
23	Internet of Things & Sensors	Equipment	Wire Strippers	10	Wire Stripper Cutter Plier With Spring -26x6x20 Cms (LxWxH)
24	Internet of Things & Sensors	Equipment	Hot glue gun + Glue Sticks	1	Range in open space(Standard Conditions) : 100 Meters
25	Internet of Things & Sensors	Equipment	Soldering Iron Kit Temperature Controlled Soldering Station	1	SIM900A based Quad band GSM/GPRS modem. Accepts 12V input supply
26	Internet of Things & Sensors	Equipment	Screwdriver	2	Multi-purpose
27	Internet of Things & Sensors	Equipment	Tool Set	2	Multi-purpose

