**Raising Young Innovators through the Conceptual Research Experience**

**Objective:**

To enable **College** students, to become active learners, who can apply their knowledge to understand the benefits of innovation in renewable energy, develop novel applications and promote its use in their surroundings.

To empower college educators to become creators of sustainable innovation ecosystems in their respective academic institutions.

To drive the culture of raising young innovators in colleges who will serve as exemplary role models for other institutions.

To implement the innovation culture in the institutions, and creation of a research incubation ecosystem, with focus on renewable energy.

The key focus area of the proposal is to develop various skills in students and teachers of government institutions for overall development of level of education in India to global standards.

**Impact Factor: Conceptual Research Experience**

In India, students’ level of learning is measured through their reading, writing and arithmetic abilities. Although prerequisite, but these *are not sufficient* for excelling as individuals in the 21stcentury, for preparing future leaders within the nation and for expediting growth of a nation into an economic powerhouse. In our view, we need to equip students with a new extended skill set as identified by Partnership for 21st century skills (P21) so that they can apply their academic learning innovatively into new situations for overcoming day-to-today challenges in their lives and in the society. Therefore, a novel Conceptual Research Experience program was introduced at selected institutions such as IIT-BHU in India, where selected students underwent research process and were encouraged to be creative, critically think, collaborate and communicate their research findings on a topic ranging from science and commerce to law and humanities. These students not only improved reading, writing and arithmetic abilities, but with better conceptual understanding were able to deliver an innovative solution for a practical problem and disseminate it at an international level, thus creating new opportunities for themselves and for their nation.

Some of the biggest impact factors of the project are:

* To enhance the thinking ability of students.
* Propagation of research and innovation in Indian institutions.
* Finding solutions to the real-life problems.
* Contribution to society through implementation of these solutions.
* Upgradation of infrastructure at institutions.
* Academia-Industry collaboration.

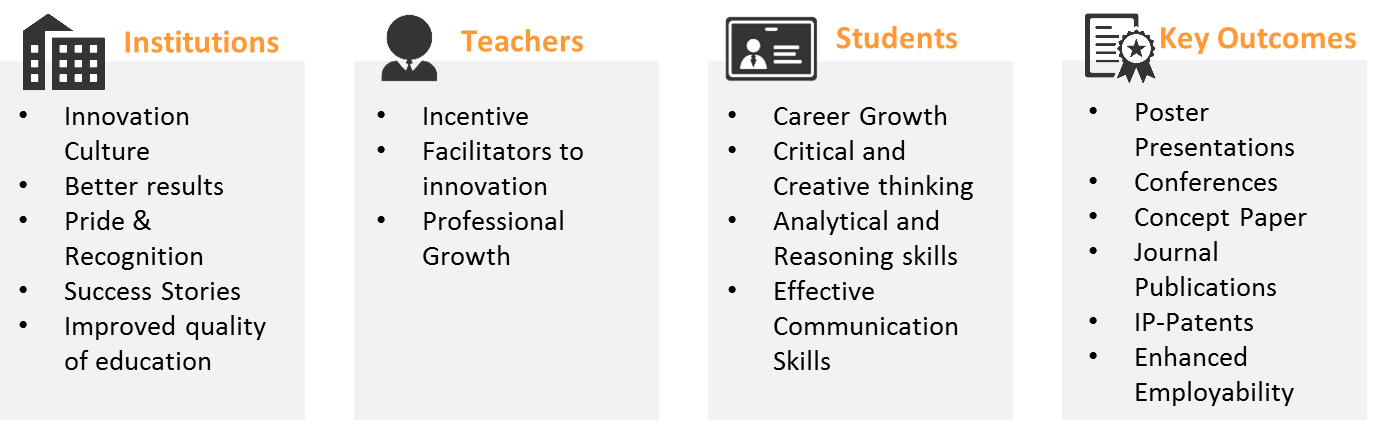
**Impact on Student Skills**

Table 1: Addition of Skills of 21st Century in Students

|  |  |  |
| --- | --- | --- |
| Skills Acquired | Phase 1 | Phase 2 |
| Creativity and Innovation | YES | YES |
| Critical Thinking & Problem Solving | YES | YES |
| Agility & Adaptability |  | YES |
| Accessing & Analyzing Information |  | YES |
| Effective Communication | YES | YES |
| Collaboration across Networks & leading by Influence | YES | YES |
| Initiative & Entrepreneurialism | YES | YES |
| Productivity & Accountability |  | YES |

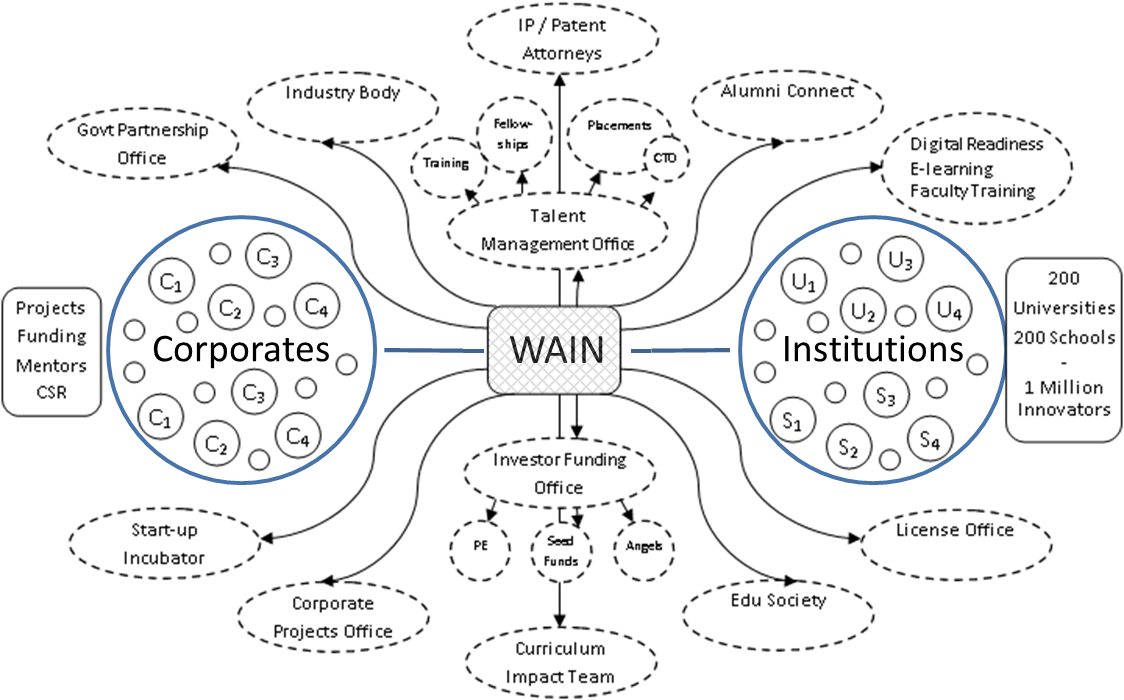
Table 2: Modes of Intellectual and Innovation Assessment of Student in the program

|  |  |  |
| --- | --- | --- |
| Skills Acquired | Phase 1 | Phase 2 |
| Interview | YES |  |
| Group Discussion | YES |  |
| Professional Skills Test | YES |  |
| Project Plan |  | YES |
| Active Review |  | YES |
| Documentation |  | YES |
| Innovation |  | YES |
| Conference Presentation |  | YES |
| Publication |  | YES |



**Impact on Ecosystem: Creation of Energy Network**

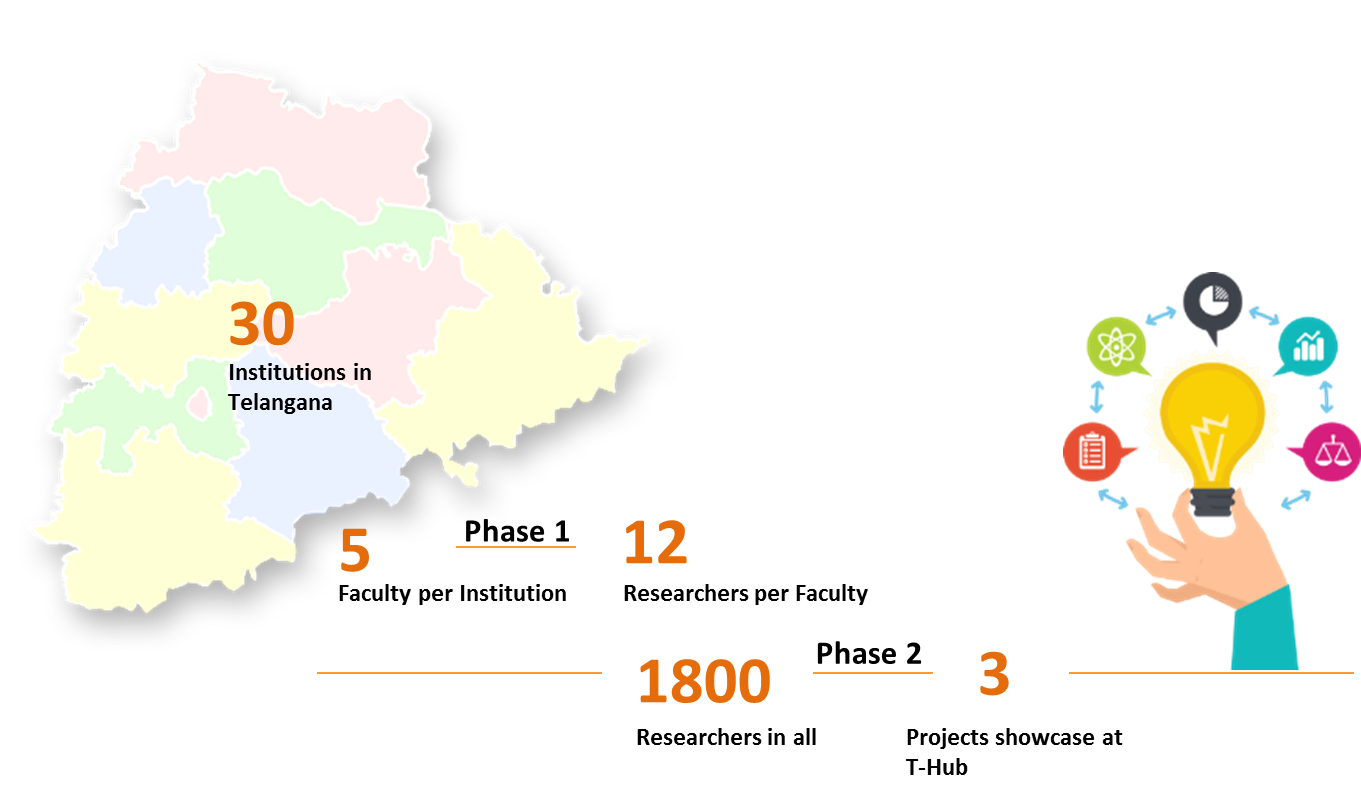
Worldwide Academia-Industry Network (WAIN) platform provides interlinked opportunities to both Academic Institutions and Companies to work together in areas such as ‘Research and Innovation’ and ‘Academia-Industry Development Programs’. The figure below shows the framework of WAIN along with the participating entities.



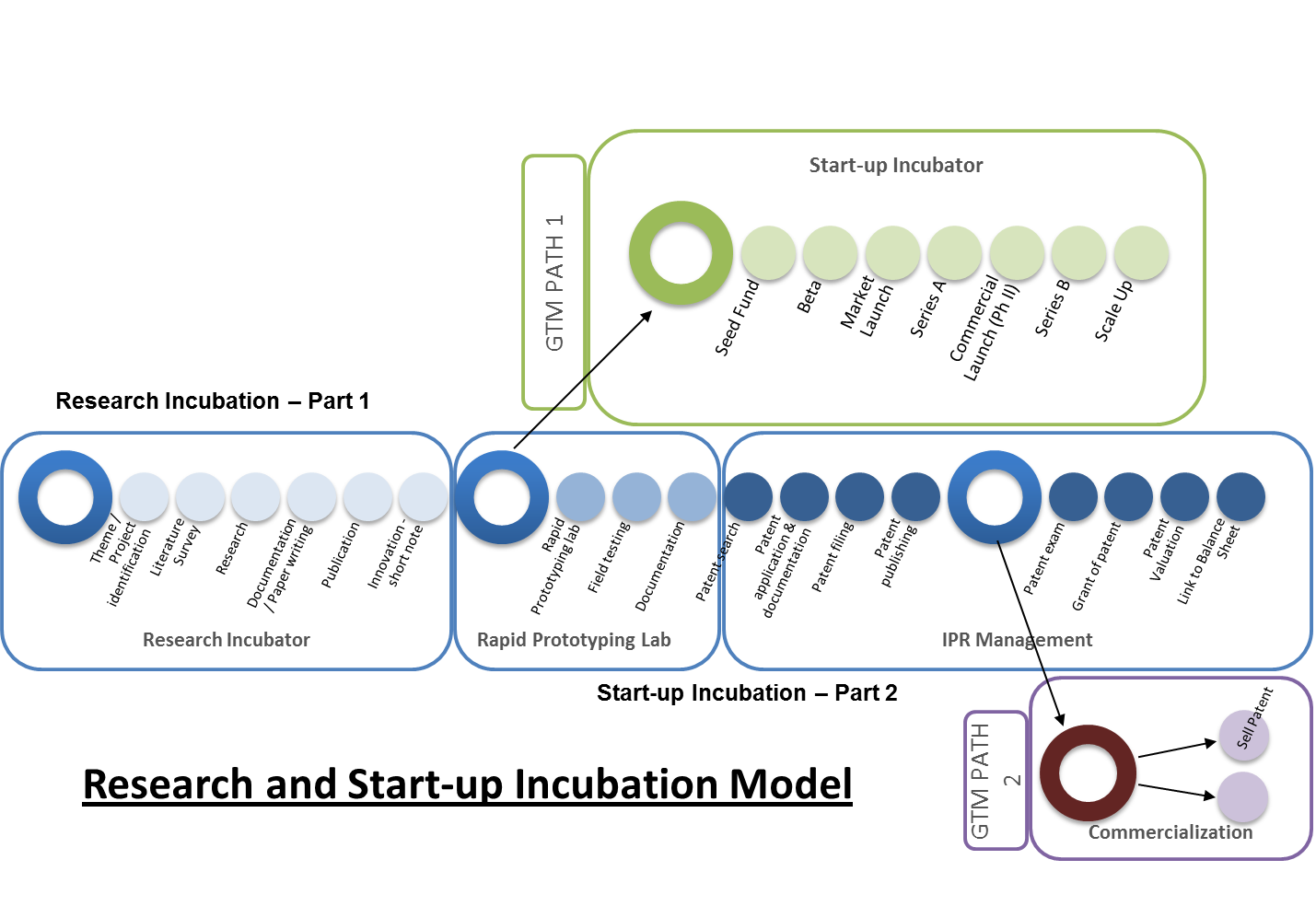
Based on the WAIN framework, a similar network will be created for the **ENERGY NETWORK** project to promote collaboration and creation of cross-functional leading to an enhanced innovation ecosystem. The profile of the participating institutions, participating teachers and the participating students will be added to the proposed network and they will be given opportunity to communicate and identify similar projects to avoid project/prototype duplicity.

**Program Core**

**Scope of Work**

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**Process Map**

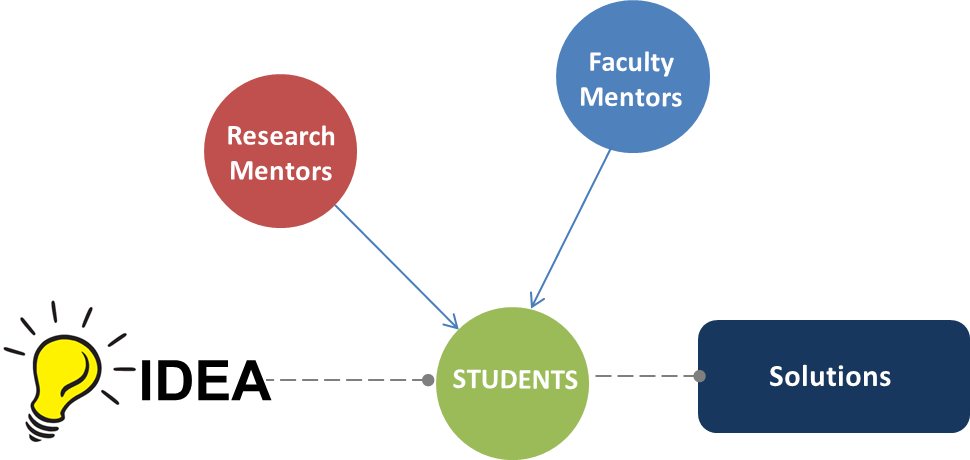
**Skill Building and Conceptualization Track**

**Schedule of Activities**

|  |  |  |
| --- | --- | --- |
| Period | Activity | Expected Outcome |
| 3 Months | Basic Skill Building  Group Formation  Theme Identification  Literature Survey  Online Innovation Bootcamp | Conference Presentations  Research Papers  Solutions  Prototypes |

**Programme Activity Track**

**Objective:** To enable students, to become active learners, who can apply their knowledge to understand the benefits of innovation, identify real life problems, develop sustainable solutions and implement in their surroundings.



**The Tripartite Collaboration as shown in the above figure, their roles are following:**

* **Research Mentor:** A Research Mentor’s job is to ensure that all necessary skills are imparted to the students and help them in creating sustainable solutions to real life problems.
* **Faculty Mentor**: Mentors students in their institution with the support of Research Mentor to enhance their skills and deliver innovation output from mapped student groups.

**Schedule of Activities**

|  |  |  |
| --- | --- | --- |
| Period | Activity | Expected Outcome |
| 3 Months | Solutions Research  Abstract Formulation  Concept Paper Writing  Showcase of Selected Ideas at T-Hub | Conference Presentations  Research Papers  Solutions  Prototypes |

**Expected Outcome of Phase 2:**

* All stages of the program completed.
* Overall 80+ hours of engagement with each student group in online and offline modes.
* Project Showcase of young innovators.
  + Showcase intellectual/innovation asset by college teams.
  + Felicitation of innovator groups will occur at T-Hub.
  + Workshop on Entrepreneurship for selected participants.
* Final Calibration of indicators of Success
* Sharing of success stories
* Closure of program