Knowledge Society

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1. Knowledge Concepts

What is 'Knowledge'?

- Indian philosophical schools, such as the Hindu Nyaya and Cārvāka, and later, the Jain and Buddhist ones, developed an epistemological tradition which is termed "*pramana*", independent of the Western philosophical tradition. Pramana can be translated as "instrument of knowledge" and refers to various means or sources of knowledge, which were held to be reliable by Indian philosophers.

- The development of the scientific method has made a significant contribution to how knowledge of the physical world and its phenomena is acquired. To be termed scientific, a method of inquiry must be based on gathering observable and measurable evidence subject to specific principles of reasoning and experimentation. The scientific method consists of the collection of data through observation and experimentation, and the formulation and testing of hypotheses.

What is 'Knowledge'?...

Knowledge is not a body of totally-certain beliefs.

In the academic tradition, knowledge is *a body of <u>rationally justified</u> <u>conclusions</u> beyond <u>reasonable doubt</u>*.

It leaves an opening for questioning / reasonable doubt when that doubt comes up, and this is how Knowledge progresses.

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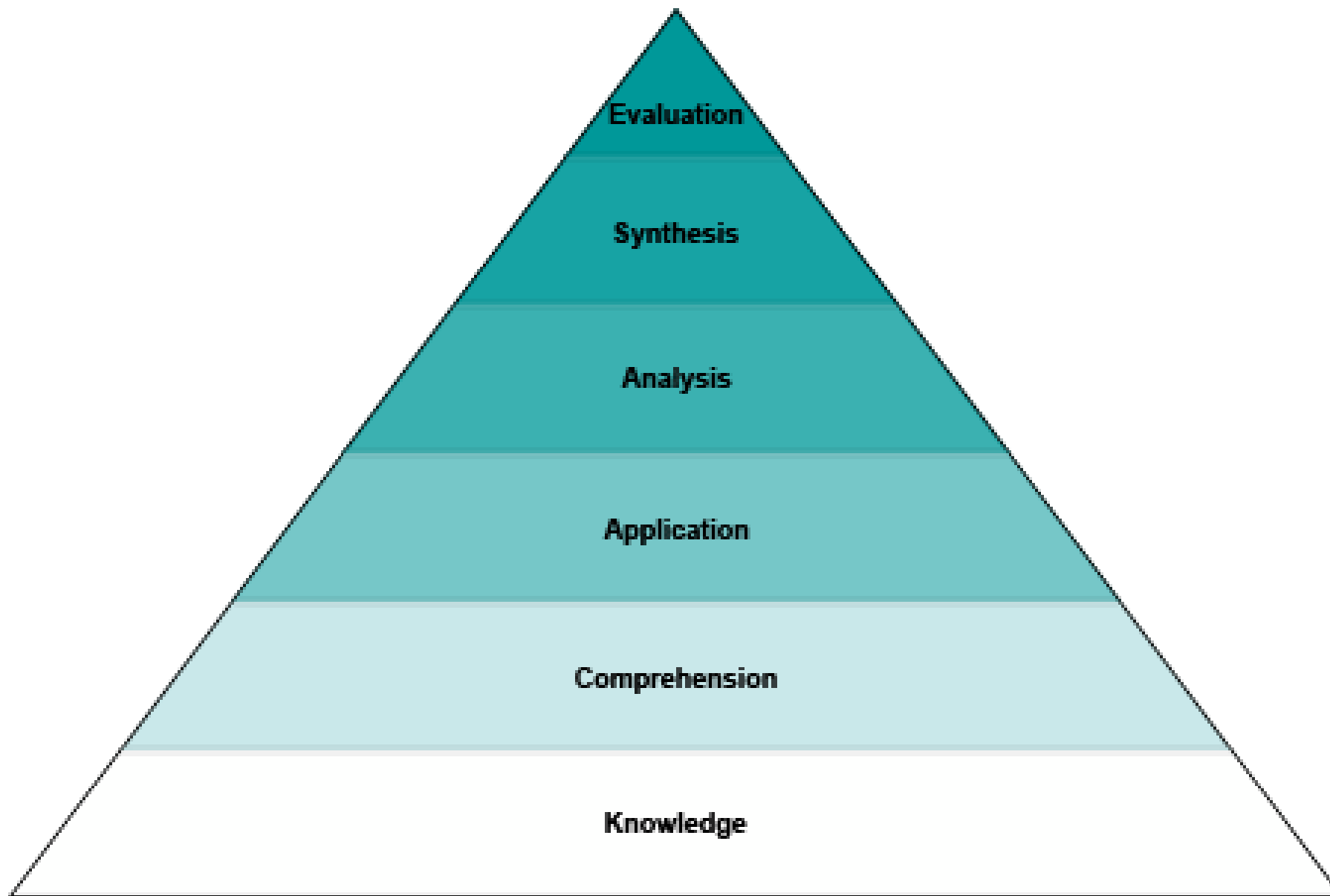
2. Creation of Knowledge

Learner at the center

- It is our responsibility as educators to ensure that our students are 'trained' in the practice of these norms of academic knowledge.

- Changes in the "Knowledge Society Discourse" are driven by changes in the higher education, reflecting the challenges & expectations generated for higher education.
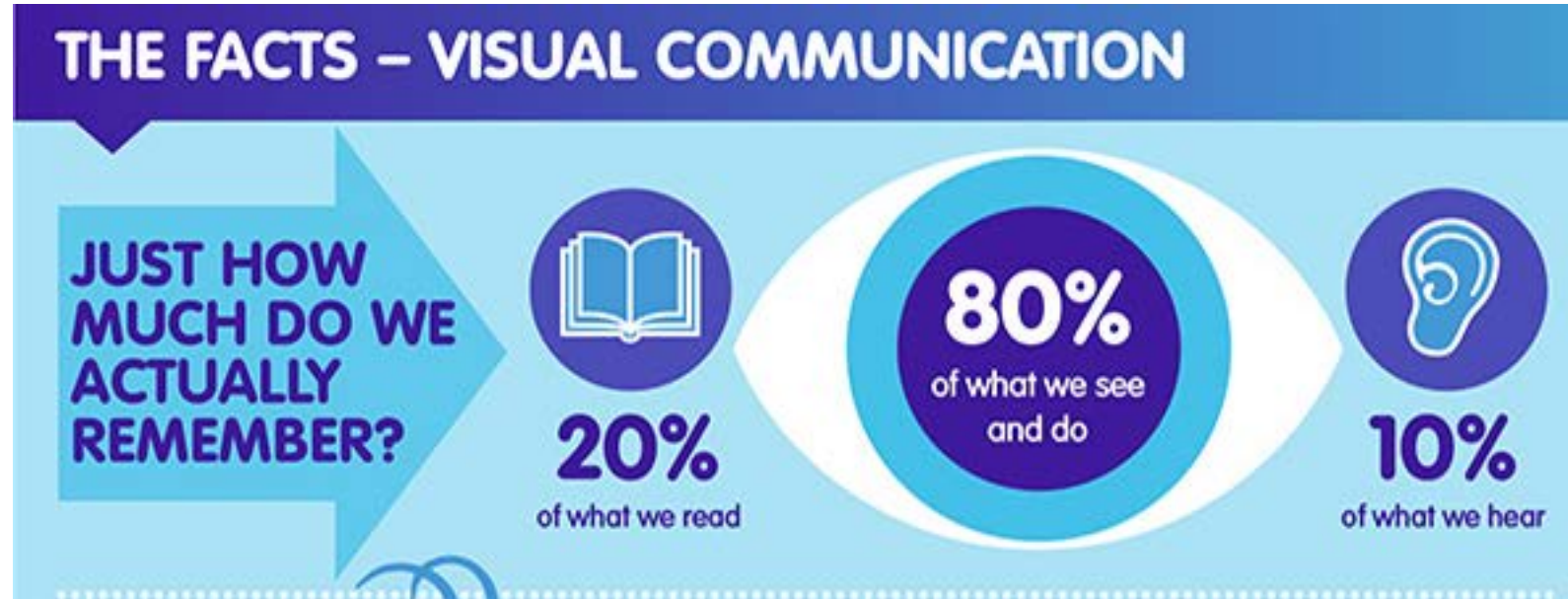
Liberal studies

"The value of an education in a liberal arts college is not the learning of many facts but the *training of the mind* *to think something that cannot be learned from textbooks."*

[Einstein (1921), on Thomas Edison's opinion that *a college education is useless*; quoted in Frank, *Einstein: His Life and Times*, p.185]

Bloom's Taxonomy of learning. Adapted from: Bloom, B.S. (Ed.) (1956)
Taxonomy of educational objectives: The classification of educational goals.
Handbook I, cognitive domain. New York ; Toronto: Longmans, Green.

How to increase the base of the pyramid?

NeuroGym?... brain training or "innercising"... expand mental and emotional power to reach their fullest potential... for specific purposes...

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Teaching-Learning Process

- Student-centric, active style of education means that the students learn by doing…

"I hear and I forget…
I see and I remember…
I do and I understand."
– Confucius

and develop the skill of creative problem-solving…

- Instructors as 'facilitators' of learning… The role of the faculty has changed from being the "*sage on the stage*" to the "*guide by the side*"!

- Technology is a great 'enabler'.

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Changing, facilitating environment

- Rules & regulations necessarily set the **minimum** standards in a diverse and growing country like ours, and should not bring any *peak of excellence* down to the prescribed 'minimum' level!

- Independent **philanthropic** interventions in higher education are needed allowing for necessary *experimentation* towards excellence, which the government often cannot risk since it is spending tax-payers' money and is hence bound by *safe rules*!

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Philanthropy – one example

Shiv Nadar University – multidisciplinary, research-focused, established in 2011

Won the "**University of the Year**" award (*in existence for less than 10 years* category) at the '**3rd FICCI Higher Education Excellence Awards 2016**', 10 November 2016

FICCI Jury

- **Mr. M. Damodaran** (Jury Chairperson), Former Chairman, SEBI; Chairman, Excellence Enablers Pvt. Ltd. and The Damodaran Group
- **Dr. Madhava Menon**, Chairman, Menon Institute of Legal Advocacy Training
- **Dr. Furqan Qamar**, Secretary General, AIU
- **Mr. Prabhat Jain**, Director, Pathways World School
- **Mr. M. S. Unnikrishnan**, Managing Director & CEO, Thermax
- **Mr. Nachiket Mohagaonkar**, CFO, Cambridge University Press
- **Prof. Pankaj Jalote**, Director, IIIT Delhi [*not* present during the final presentation]
- **Mr. Deepak Mehrotra**, Managing Director, Pearson India
- **Mr. Anand Sudarshan**, Founder-Director, Sylvant Advisors.

http://www.ficci-hes.com/pdf/Jury%20List.pdf

Schools & Departments

SCHOOL OF ENGINEERING (SoE)
- Chemical Engineering
- Civil Engineering
- Computer Science & Engineering
- Electrical Engineering
- Mechanical Engineering

SCHOOL OF HUMANITIES & SOCIAL SCIENCES (SHSS)
- Art & Performing Arts
- Communication
- Design
- Economics
- Education
- English
- History
- International Relations & Governance Studies
- Sociology

SCHOOL OF NATURAL SCIENCES (SNS)
- Chemistry
- Life Sciences
- Mathematics
- Physics

SCHOOL OF MANAGEMENT & ENTREPRENEURSHIP (SME)

SCHOOL OF EXTENDED EDUCATION & PROFESSIONAL DEVELOPMENT (SEEPD) -- launched

SCHOOL OF LAW – soon

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Opportunities for Undergraduate Research

OUR program, outside the UG curriculum, was started by the Dean of Research in 2014

- Expand opportunities for learning by UG students
- Live research and knowledge application environment

- **44** projects in Year I
- **70** projects in Year II
- **84** projects in Year III...

Papers Published

Student	Guide	Publication Journal	Impact Factor
Gaganpreet Khosla	Dr. Bimlesh Lochab	Scientific Reports	**5.58**
T Subhash Sundar	Dr. Priya Johari	Physical Chemistry Chemical Physics	**4.49**

Many more research publications to follow...

3. Knowledge Applications

Research Centers

- Big Data Analytics Center (BDAC)

- Center for Environmental Sciences & Engineering (CESE)

- Center for Informatics (CFI)

- Center for Public Affairs and Critical Theory (C-PACT)

- Center for Writing Studies -- proposed

- Institute for Innovations & Inventions with Mathematics and I.T. (IIIMIT)

Water Science & Policy: Unique program launched

- **2-year M.Sc. in Water Science and Policy, August 2017--**
- 1-year Advanced Diploma in Water Science and Policy (2 options)
- 16-week Diploma in Water Science and Policy (3 options)
- 8-week Advanced Certificate in Water Science and Policy (6 options)
- 4-week Certificate in Water Science and Policy (12 options)

Modular, flexible structure, to allow stakeholders from government, civil society and industry to opt for selective courses from within the program

Inception Workshop
April 28-29

WATER SCIENCE and POLICY

First of its kind academic programme
A multi-disciplinary perspective on water
Special focus on policy and practical solutions
Offers Modular Course Structure with Degree and Certificate Options

The Centre for Public Affairs and Critical Theory (C-PACT) and School of Humanities and Social Sciences (SHSS) is offering 2-year multi-disciplinary post-graduate (M.Sc.) programme on Water Science and Policy. C-PACT is committed to research and public dissemination of that research in an accessible form, on issues critically significant for the lives and livelihoods of millions, as also for the very future of India's much-coveted growth process: land, water, agriculture and health. The 2-year multi-disciplinary post-graduate (M.Sc.) programme on Water Science and Policy at SNU aims to be a unique programme globally. The programme will be launched with effect from August 1, 2017.
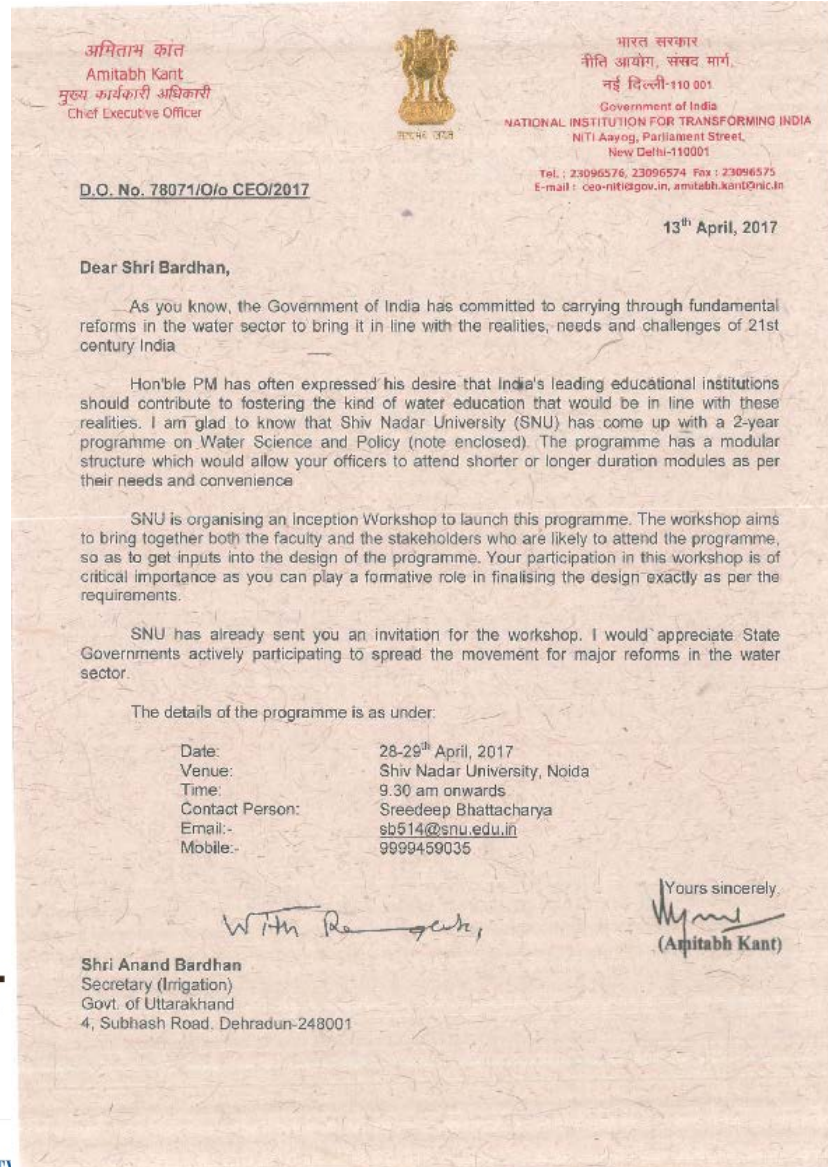
Active Participants on 29 April 2017:

Dr. Amarjit Singh, Secretary, Ministry of Water Resources

Mr. Parameswaran Iyer, Secretary, Ministry of Drinking Water & Sanitation

Government of India

M.Sc. in Water Science & Policy: Sample letter from the CEO, Niti Aayog

"As you know, the Government of India has committed to carrying through fundamental reforms in the water sector to bring it in line with the realities, needs and challenges of 21st century India.

Hon'ble PM has often expressed his desire that India's leading educational institutions should contribute to fostering the kind of water education that would be in line with these realities. I am glad to know that Shiv Nadar University (SNU) has come up with a 2-year programme on Water Science and Policy (note enclosed). The programme has a modular structure which would allow your officers to attend shorter or longer duration modules as per their needs and convenience.

SNU is organising an Inception Workshop to launch this programme. The workshop aims to bring together both the faculty and the stakeholders who are likely to attend the programme, so as to get inputs into the design of the programme. Your participation in this workshop is of critical importance as you can play a formative role in finalising the design exactly as per the requirements.

SNU has already sent you an invitation for the workshop. I would appreciate State Governments actively participating to spread the movement for major reforms in the water sector. ..."

M.Des. launched

… nurturing design-thinking for innovation in a liberal, research-centric environment.

Offers an experiential based learning, facilitating the 'concept-to-function' transition…

Make in India

↓

Make *by* India

"No need to make in India but start make by India"
स्वदेशी जागरण मंच ने कहा- मेक इन इंडिया नहीं मेक बाए इंडिया की जरूरत
– Dainik Jagran, 22 August 2016

http://www.jagran.com/news/national-no-need-to-make-in-india-but-starts-make-by-india-project-says-swedeshi-jagran-manch-14548065.html

Incubator grant from Niti Aayog, Govt. of India

- Proposal under the AIM (Atal Incubation Mission) program of Niti Aayog; to grant ~Rs. 10 crores over a period of 5 years, matching contribution by the university... around issues that would lead to social upliftment & overall growth of the nation.

- SNU's Chosen Focus Areas: Education, Healthcare

- Out of 1719 academic & 1939 non-academic applications, finally **10 (< 0.3%) got selected, SNU being one (June 2017)!**

Incubator (In Progress)

Application Type	#
Academic	1719
Non-academic	1939
Total	3658

Academic	Total	%
Government	426	25%
Private	1293	75%
Grand Total	1719	100%

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University as Driver of 'Knowledge Triangle'

Education 4.0?

Education 3.0 "*is characterized by rich, cross-institutional, cross-cultural educational opportunities within which the learners themselves play a key role as creators of knowledge artifacts that are shared, and where social networking and social benefits outside the immediate scope of activity play a strong role* ".

-- Prof. Derek Keats [& J. Philipp Schmidt]

- Universities have been charged with being "knowledge incubators". They need to now step up, and become "**knowledge economy incubators**"…

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Ecosystems, not stand-alone institutions

"If you look at history, innovation doesn't come just from giving people incentives; it comes from creating environments where their ideas can connect."   -- Steven Johnson

- Ecosystems of partners centered around universities are competitive necessities, in which everyone can win.

Partners

Shiv Nadar Students at Global Learning Semester Duke Kunshan University

SNU-Duke Research Collaboration

Consortia Based Project E-QUAL

SNU (the youngest)-U Bologna (the oldest living)   ...

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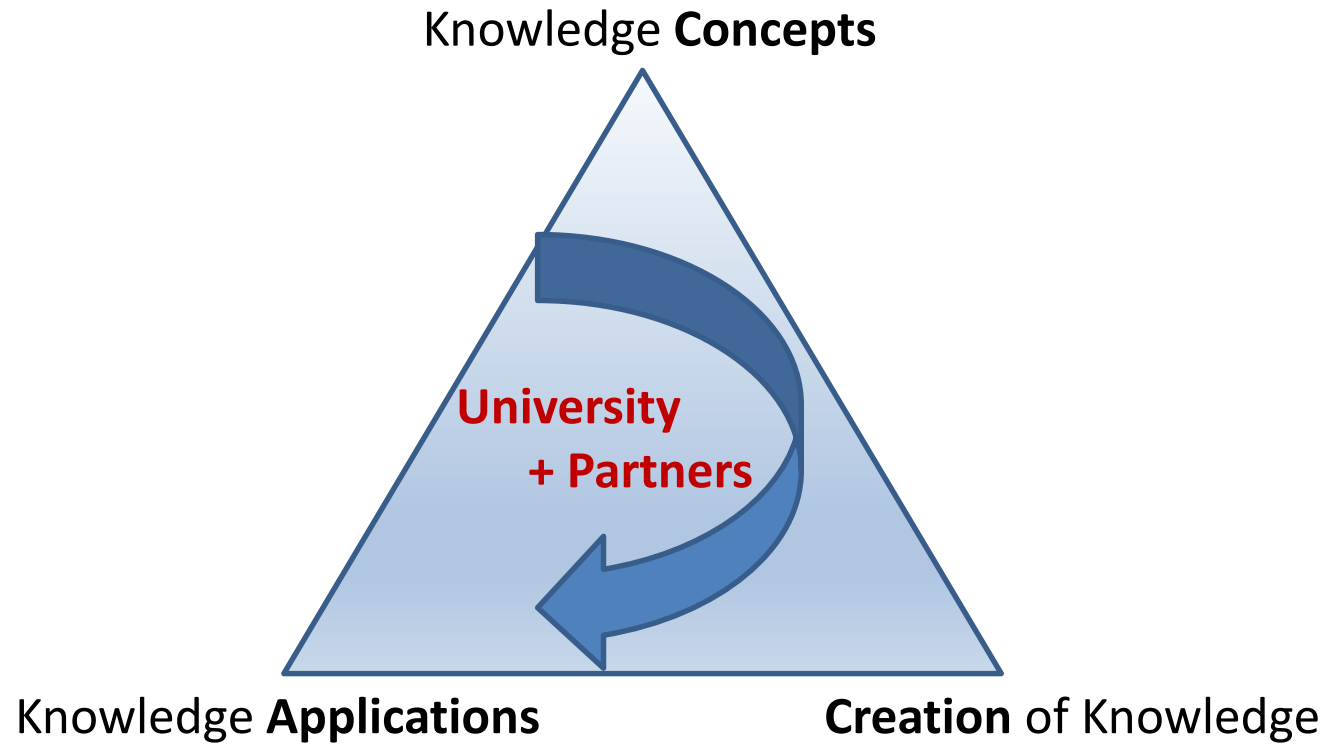
Partnership framework

Matching philosophy… complementary resources… equity in partnerships – based on strengths…

➢ Student and/or Faculty focused,

➢ Curriculum and/or Research/Innovation based

Looking forward…

– Center of Entrepreneurship, University of Canterbury

– Education & Health Sciences Research Labs, University of Canterbury

– Velocity & Chiasma, University of Auckland

– The Startup Space, Powerhouse Ventures, The Distiller & Callaghan Innovation, University of Otago

– Summer Research Scholarships, Victoria University of Wellington

– Teacher Learning & Innovations in Practice, University of Canterbury

– UniServices Ltd., University of Auckland, opening in India…

Knowledge triangle

Knowledge **Concepts**

University + Partners

Knowledge **Applications**   **Creation** of Knowledge

Serious logistic issues:
- Access to Knowledge
- Delivery of Services

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Thank you

www.snu.edu.in