Indonesia: Education & Training, Outreach Activities (ANENT Framework)

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IAEA RAS0075 ANENT
The Second Coordination Meeting
Tsuruga, 15-19 May 2017
Outline

- Introduction
- Capacity Building
- Education and Training
- NKM Activities
- Outreach Activities
Introduction

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Introduction

IAEA Concept for Nuclear Capacity Building

- E&T
- HRD
- NKM
- Knowledge Network
Capacity Building

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Capacity Building of BATAN

Targets/Beneficiaries

- BATAN
- Universities
- Public

- BATAN
- Stakeholders

- BATAN
- NKM

- BATAN
- HRD

- BATAN

Knowledge Network
Capacity Building of BATAN

Objectives:

**E&T**
- Building Competences
- Preserving nat. comp. on NST
- Public Outreach

**HRD**
- Effective Human Capital Management

**NKM**
- Preserving NK
- Preventing NK loss
- Harvesting NK

**Nuclear Network**
- Building competencies
- Stakeholders involvement
- Public outreach
- Increasing public support
Capacity Building under ANENT Framework

Activities:

**E&T External**
- TC for teachers, students, lecturers
- IRL
- Public Outreach

**E&T Internal**
- System Improvement
- Method diversification
- Infrastructure improvement
- Networking

**NKM**
- Infrastructure development
- Self Assessment

**Nuclear Network**
- TC IAEA
- ANENT
- ANSN
- NSSC
- FNCA
- ICERR
- Stakeholders
- Foreign Univ.
- Domestic Univ.
E&T External

- Introduction to nuclear science for high school teachers
- Nuclear school for students and lecturers of universities
- Radiochemistry for universities students
- Facilities of Medical Physics for universities students
- Practical works for Medical Physics students
- Neutron Activation Analysis for universities students, etc.
E&T External: Nuclear School
- 2 days activity for students and lecturers of universities
- 10 -12 participants; 2-4 times/year

Day 1
- Opening
- Introduction on Nuclear School
- Introduction to Reactor Kartini
- Introduction to Radiation Protection
- Introduction to Reactor Operation and Neutron Flux Measurement
- Practical Work 1: Reactor Operation
- Practical Work 2: Neutron Flux Measurement
- Discussion

Day 2
- Introduction to Radiation Detectors and Measurement
- Practical Work 3: Control Rod Calibration
- Practical Work 4: Measurement of Temperature Negative Reactivity
- Practical Work 5: Reactor Power Calibration
- Discussion
- Evaluation and Feedback
Objective

- Make available Reactor Kartini facilities for practical works on reactor physics through internet

Status

- System was prepared
- Collaboration with many universities
Some recommendations from EM

I&C
- Analyze the opportunity to electrically isolate signals used for operation to the data acquisition system related to the IRL
- Evaluate and develop isolation amplifier to the signals

Video Conference System
- Add one camera to show the core from the top of the reactor tank
- Change the video conference system to a new one with support to several camera input, or choose one VC system that supports multipoint connections
E&T External: IRL

Some recommendations from EM

**Protocol & Web platform**

- lecturers & the web platform developers work together in the design on the web platform
- re-write the protocols using the characteristics of the platform developed.

**Operation**

- conduct an orientation workshop with remote
- assign IRL administrator
- local lecturer and the remote lecturer get in touch before the broadcast
- Plan the schedule in advance
E&T Internal

System improvement
- Training grouping
- Training grading
- Online application
- Online evaluation

Method diversification
- Classical classroom
- Blended learning
- Full e-learning
- Developmental assignment

Infrastructure enhancement
- Moodle-based LMS

Networking
- Utilizing IAEA resources
- Utilizing partners resources
NKM Activities

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NKM Infrastructures

- Awareness
- Training

- tacit to explicit
- explicit to tacit
- tacit to tacit

People

Process

Technology

Improvement of IT Infrastructure
### NKM Self-Assessment

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Critical Knowledges

Needed, non-existent knowledge
- TOT: medical application of RIs
- TOT: Reactor Engineering

Existing, limited holders
- TOT: Radiografer Level 2 dan 3
- TOT: Radiation Protection
- TOT: Nuclear Instrumentation
- TOT: Teaching Methods, Learning materials development
- Maintenance of nuclear radiation detectors

Potential Knowledges Loss

TOT: Radiography Level 2 dan 3
TOT: Radiation Protection
TOT: Nuclear Instrumentation
TOT: Teaching Methods, Learning materials development
Maintenance of nuclear radiation detectors
Outreach Activities
Outreach through Education (1)

Nuclear Goes to School

*Edufun*, Presentation & motivation, simple practices, sharing & discussion, games, and role play “who want’s to be a nuclear scientist”

Nuclear Corner

Information designed in fun and interactive concept and located in public facilities (Science Park, School)

Science Competition

Competition on nuclear science topics and mini project.
Outreach through Education (2)

**Nuclear Facility Visit**
Nuclear facilities visit and tour for public.

**Scholarship**
The academic scholarship for students who have interest in studying majors related to nuclear science.

**Nuclear in Curriculum**
collaboration with Ministry of Education to include nuclear science for high school curriculum.
Activities of public information

**Seminar, Talkshow**
Disseminating R&D products, recent and update status of nuclear in Indonesia with discussion and general sharing

**Focus Group Discussion**
Meeting with stakeholders and shareholders about nuclear prospect in future, also intense sharing about status of NPP

**Products Exhibition**
Introducing R&D products that has been proved and useful for public or communities. i.e : Food, Medicine, Agriculture and others proven products
Activities of public information

Training of Trainer
Workshop for training local figure as a “nuclear communicator” to deliver nuclear information for local societies.

Website
Provide nuclear up to date information and news for world wide public.
www.batan.go.id, www.infonuklir.com

Print Media
Information about nuclear also spread by using print media, i.e: flyers, magazines, etc
Media campaign

**TV Commercial**
Produce and placement tv commercial about nuclear energy, environment and technology achievement.

**Variety Show on TV**
Blocking time on TV show, i.e. talkshow or advetorial about nuclear safety issues, energy prospect, human resource and others.
Media campaign

Public Service Advertisement on Radio
Produce and placement commercial break and *bumper* with nuclear theme and news.

Radio Talkshow
Talkshow and interactive discussion about Nuclear Safety Issues, Socialization Activities, Young Communities, Education, and Human Resource.
Publication in mass transportation

Human resource & Nuclear Safety

Nuclear in Our life

55 tahun kami mengabdi
dan akan terus mengabdi
26 profesor, 1872 ahli nuklir dan 3003 pekerja berverbala belajar di 3 reaktor dan 5 kawasan nuklir, mengembangkan teknologi nuklir untuk kemajuan bangsa.
Dan kami terus menghantarkan rakyatnya, 250 juta rakyat Indonesia untuk terus mengabdi,
mempersembahkan karya terbaik untuk negeri.

Energi Nuklir Untuk Kemajuan Bangsa

NUCLEAR reaction is the energy source of SUN
Malah memperoleh energinya dari reaksi fusi nuklir, menghasilkan getah anggaran dan energi yang menjadi sumber energi primer bagi kehidupan di planet bumi dan memberikan manfaat bagi manusia.
Terinspirasi dari fenomena alam, kita juga telah mampu mengembangkan teknologi nuklir dan radioaktif untuk memberikan manfaat bagi kehidupan manusia.

www.batan.go.id
Proposals

- Use of IAEA e-learning system for national trainings
- Use of IAEA modules for national trainings
- Supports for IRL development & operation

E&T

- Use of IAEA resources
- Support for capacity building to knowledge creation
- ToT for critical knowledges

NKM

- Capacity building on public information

Outreach

www.batan.go.id 03/11/18
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