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STATE ISLAMIC UNIVERSITY
SUNAN KALIJAGA
YOGYAKARTA

**PROCEEDING
INTERNATIONAL SEMINAR**

**“OPTIMIZING OF MULTIPLE INTELLIGENCES
TO EXAGGERATE HUMAN POTENTIAL TOWARDS
VIRTUOUS CHARACTER”**

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**“OPTIMIZING OF MULTIPLE INTELLIGENCES TO EXAGGERATE
HUMAN POTENTIAL TOWARDS VIRTUOUS CHARACTER”**

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STATE ISLAMIC UNIVERSITY
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KATA PENGANTAR

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Kegiatan ini terselenggara atas dasar perlunya perubahan demi perubahan, inovasi-inovasi pembelajaran senantiasa menjadi perhatian kalian akademik dan praktisi pendidikan.

Dalam hal ini prodi PGMI akan berusaha semaksimal mungkin untuk senantiasa mengembangkan kegiatan yang mendukung peningkatan mutu tersebut, baik untuk dosen, mahasiswa, bahkan bagi alumni dari PGMI itu sendiri, serta masyarakat luas pada umumnya sebagai pengguna dari alumni PGMI Fakultas Ilmu Tarbiyah dan Keguruan UIN Sunan Kalijaga. Peningkatan mutu tersebut di antaranya dilakukan dalam bentuk pelaksanaan 'seminar internasional'. Seminar internasional akan menetapkan tema "*Summit Meeting on Education The End of The Year 2013*" dan Penandatanganan MOU dengan University Kebangsaan Malaysia (UKM).

Adapun kegiatan yang diselenggarakan meliputi kegiatan Seminar Internasional dengan tema Optimalisasi kecerdasan majemuk untuk melezinkan potensi menuju manusia berbudi pekerti. Dilanjutkan Fashion show Tarbiyah *Fashion Week 2015* yang bertajuk "Islami, Trendy and Syar'i". Kegiatan berikutnya adalah Seminar Nasional dengan tema Kurikulum 2013 "Realisasi dan Refleksi Kurikulum 2013". Berikutnya Seminar Peringatan hari Ibu dengan "Peran keluarga dalam pendidikan anak (Kolaborasi catur pusat pendidikan)". Dilanjutkan dengan acara Bedah buku yang bertema "Merajut pendidikan di kota Yogyakarta" karya: Bp. Zainal Abidin, M.Pd. Selanjutnya Seminar Edupreneurship dengan tema "Membangun kreatifitas melalui edupreneurship"

Adapun narasumber dari kegiatan ini dari berbagai negara, yaitu: dari negara Malaysia, Australia, Brunei Darussalam, dan Indonesia. Adapun nama-nama narasumber sebagai berikut: Prof. Dr. Lilia Halim (University Kebangsaan Malaysia), Bapak Setiyo Iswoyo, Drs. HD. Iriyanto, M.M., Dr. Slamet Suyanto (Dosen Pendidikan Biologi, UNY), Hj. Dyah Suminar (SE istri mantan walikota Yogyakarta), Prof. Dr. Taufik Ahmad Dardiri, SU (Dosen Fakultas Adab dan Ilmu Budaya, UIN Sunan Kalijaga), M Arief Budiman, S.Sn., Managing Director PT. Petakumpet Yogyakarta. Adapun peserta dari kegiatan ini dari berbagai negara yaitu Turki, Rusia, Thailand, Malaysia.

Dalam hal ini dosen atau pendidik pada umumnya adalah perintis pembangunan di segala bidang kehidupan dalam masyarakat. Seorang dosen atau pendidik yang benar-benar sadar akan tugas dan tanggung jawabnya, tentulah akan selalu mawas diri, mengadakan introspeksi, berusaha selalu ingin berkembang maju, agar bisa menunaikan tugasnya lebih baik, dengan selalu menambah pengetahuan, memperkaya pengalaman, menambah kualitas dirinya melalui membaca buku-buku perpustakaan, mengikuti seminar loka-karya, kursus-kursus penataran, dan sebagainya agar selalu bisa mengikuti gejolak perubahan sosiokultural dalam masyarakat serta kemajuan ilmu dan teknologi modern dewasa ini. Melalui kegiatan *international Summi Meetng* ini diharapkan dosen, guru, dan mahasiswa menjadi lebih profesional, khususnya terkait dengan kompetensi profesional.

Pekerjaan mengajar memang tidak selalu harus diartikan sebagai kegiatan menyajikan materi pelajaran. Meskipun penyajian materi pelajaran memang merupakan bagian dari kegiatan pembelajaran, tetapi bukanlah satu-satunya. Masih banyak cara lain yang dapat dilakukan guru untuk membuat siswa belajar. Peran yang seharusnya dilakukan guru adalah mengusahakan agar setiap siswa dapat berinteraksi secara aktif dengan berbagai sumber belajar yang ada. Guru pun sangat erat kaitannya dengan pendidikan karakter.

Pendidikan karakter yang semakin hangat sering menimbulkan kekhawatiran para guru. Namun sebenarnya hal itu tidak perlu khawatir, masih banyak tugas guru yang lain seperti: memberikan perhatian dan bimbingan secara individual kepada siswa yang selama ini kurang mendapat perhatian. Kondisi ini akan terus terjadi selama guru menganggap dirinya merupakan sumber belajar satu-satunya bagi siswa. Jika guru memanfaatkan berbagai strategi pembelajaran secara baik, guru dapat berbagi peran dengan strategi. Peran guru akan lebih mengarah sebagai manajer pembelajaran dan bertanggung jawab menciptakan kondisi sedemikian rupa agar siswa dapat belajar. Untuk itu guru lebih berfungsi sebagai penasihat, pembimbing, motivator dan fasilitator dalam Kegiatan Belajar Mengajar.

Upaya Pemerintah terhadap tenaga guru sebenarnya telah dilakukan oleh Pemerintah Republik Indonesia, melalui berbagai bentuk kebijakan. Ditetapkannya Undang Undang nomor 14 tahun 2005 tentang guru dan dosen merupakan dasar kebijakan untuk memperkuat eksistensi tenaga kependidikan sebagai tenaga profesional, seperti profesi-profesi yang lainnya. Kualitas profesi tenaga guru selalu diupayakan, baik melalui ketentuan kualifikasi pendidikannya maupun kegiatan in-service training, dengan berbagai bentuknya, seperti: pendidikan dan latihan (diklat), penataran dan pelibatan dalam berbagai seminar untuk memperbarui wawasannya dalam kompetensi pedagogi dan akademik.

Pemerintah mulai menyadari betapa strategisnya peran tenaga guru dalam mengantarkan generasi muda untuk menjadi sumber daya manusia (SDM) yang berkualitas dan kompetitif sehingga mampu mewujudkan suatu kesejahteraan bersama. Sejarah peradaban dan kemajuan bangsa-bangsa di dunia membelajarkan pada kita bahwa bukan sumber daya alam (SDA) melimpah yang dominan mengantarkan bangsa tersebut menuju pada kemakmuran, tetapi ketangguhan daya saing dan keunggulan ilmu pengetahuan dan penguasaan teknologi (ipteks) bangsa tersebutlah yang berperan untuk meraup kesejahteraan. Bahkan SDM yang menguasai ipteks cenderung memanfaatkan teknologinya untuk menguasai SDA bangsa lain. Dalam hal ini pemerintah ingin mengejar ketertinggalan dengan menyempurnakan kurikulum KTSP menjadi Kurikulum 2013.

Kurikulum 2013 yang telah diimplementasikan pada tahun ajaran 2013/2014 menimbulkan pro dan kontra atas kurikulum tersebut masih terus terdengar. Banyak pihak yang mempertanyakan kesiapan implementasinya, pengembangan bahan ajarnya, evaluasinya, dan proses pembelajarannya di kelas. Perwakilan guru di Kota Kupang menilai implementasi kurikulum pendidikan 2013 akan menjadikan guru-guru seperti robot. Alasannya, semua Rencana Pelaksanaan Pembelajaran (RPP) dan Silabus disusun oleh pemerintah pusat. Sedangkan guru hanya siap untuk mengajar dengan RPP yang ada. Pada tahun ajaran 2013/2014, kurikulum baru akan diberlakukan untuk siswa kelas 1 dan 4, sedang siswa kelas 2,3,5, dan 6 masih menggunakan kurikulum lama. Beberapa pendapat pro dan kontra masih terus berlanjut, tapi mau tak mau kurikulum baru akan segera diimplementasikan secara bertahap. Seminar ini memperbincangkan masalah tersebut dari sisi pembuat kebijakan, ahli kurikulum, dan praktisi pendidikan/pengajaran.

Demikian yang dapat kami sampaikan terkait dengan esensi dari penyelenggaraan kegiatan “*Summit Meeting on Education The End of The Year 2013*”. Kami mengucapkan terima kasih banyak atas partisipasi dan dukungan dari berbagai pihak yang tidak dapat kami sebutkan satu per satu. Tanpa bantuan dan partisipasi rekan-rekan semua kegiatan ini tidak dapat terlaksana dengan baik. Semoga kegiatan ini dapat menambah kontribusi pada khasanah keilmuan khususnya pada Pendidikan Dasar dan memberi manfaat kepada para peserta dan pembaca. Amiin

Yogyakarta, 19 Desember 2013

Ketua Panitia

Dr. Aninditya Sri Nugraheni, M.Pd.



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INDONESIAN RELISTICS MATHEMATICS EDUCATION THROUGH MULTIPLE INTELEGENCE AT ELEMENTARY SCHOOL

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ABSTRACT

Indonesian realistic mathematics education (IRME) through the characteristics could optimize students' multiple intelligences. The characteristics of IRME are: (1) use of contexts for phenomenologist exploration, (2) use of models for mathematical concept construction, (3) use students' creation and contributions, (4) student activity and interactivity in the learning process, (5) intertwining mathematics concepts, aspects, and units, and (6) use of typical characteristics of Indonesian nature and cultures. The eight intelligences identified by Howard Gardner are: (1) verbal/linguistic, (2) visual/spatial, (3) bodily/kinaesthetic, (4) intrapersonal, (5) logical/mathematical, (6) musical/rhythmic, (7) interpersonal, and (8) naturalist. All this time, verbal/linguistic and logical/mathematical mostly used and facilitated to assessed the success the students' in learning at elementary school. Also in mathematics learning, teacher usually just facilitated the students who have dominant in logical-mathematical intelligent. Indonesian realistic mathematics education that used contexts for phenomenologist exploration with Indonesian nature and cultures makes teacher could teach mathematics with learning activities that can facilitated students' multiple intelligences easily. Students' activity and interactivity in the learning process could facilitate students to develop their interpersonal and verbal/linguistic intelligences. Interpersonal intelligence develops through discussion and sharing the invention strategy among students during the learning process. Verbal/linguistic intelligence develops through students' activity when they write and present the result of mathematics problem.

Keywords: *Indonesian Realistic Mathematics Education, Multiple Intelligences*

A. INTRODUCTION

Mathematics is still a lesson that is not fun for most of students. In the classroom the teacher is often explained then gives examples of mathematics problem and followed by students' exercises. Learning like this just creates passive learner and only facilitates students with auditory learning style. Whereas students have different learning styles, they are visually, auditory and kinaesthetic. According to Gardner in different learning style can identified eight intelligences. The eight intelligences identified by Howard Gardner are: (1) verbal/linguistic, (2) visual/spatial, (3) bodily/kinaesthetic, (4) intrapersonal, (5) logical/mathematical, (6) musical/rhythmic, (7) interpersonal, and (8) naturalist.

Learning mathematics in elementary schools is just facilitating logical-mathematical

intelligence. Whereas students have different dominant intelligences and learning would be maximized if the teacher facilitates the students' MI in the teaching of Mathematics. Mathematics teaching through MI is a great example of learning strategies. Through IRME, teacher could make learning math more fun and could facilitate different intelligence students in the class.

B. ANALYSIS

1. Indonesian Realistic Mathematics Education through Multiple Intelligences.

Mathematics in elementary school is just facilitates logical intelligence/Mathematical. It is not up to facilitate the other seven intelligences. The expected outcome of the current mathematics learning is much more comprehensive and deeper than just mechanical mastery. The very important of Mathematics teacher's responsibility is to encourage creativities by helping students discover the basic idea, the rules and principles of mathematics so that students find most interesting thing in the study of mathematics is mathematics itself (Mark, Hiatt & Neufeld, 1988: 11).

Indonesian Realistic Mathematics Education is a movement to improve the quality of mathematics education in schools. This movement found that the change should be done starting from the basic level i.e. Elementary School/Madrasah Ibtidaiyah which is the foundation of the formal education system, and then forwarded to a higher level. Indonesian Realistic Mathematics Education changed the paradigm of teaching and learning mathematics learning. Indonesian Realistic Mathematics Education adapted, not adopted, of Realistic Mathematics Education (RME) that have been developing in the Netherlands since 1971. Indonesian Realistic Mathematics Education is not the same as the RME though RME is the source of IRMI which adapted to Indonesian culture.

IRME learning approach should be started from the context, that is begins with the involvement of students in solving contextual problems. The real context, it means something that can be imagined by the students. Thus, in learning mathematics should be closed to the children's life and accordance to daily situation. Moreover, mathematical ideas should be emphasized in the daily activities of the children (Uzel, 2006: 1952). In the learning process using IRME approach teachers should role as facilitators for students in constructing mathematical ideas and concepts.

Learning mathematics with a realistic approach has distinguished characteristics to other approaches. The characteristics of IRME are (Sutarto, Zulkardi & Hoongland, 2010: 153):

- a. Use of contexts for phenomenologist exploration: learning process starts with students' involvement in solving contextual problem
- b. Use of models for mathematical concept construction: the use of a model for progressive mathematization: mathematics concept or idea reconstructed by students through mathematical models of vertical instrument, which is moving from informal procedure to formal form.
- c. Use students' creation and contributions: students actively construct mathematical material to the facility based learning environment provided by the teacher.
- d. Student activity and interactivity in the learning process: learning activities should be interactive, there are communication and negotiation between the students in the learning process.
- e. Intertwining mathematics concepts, aspects, and units: learning a mathematics material which is related to various mathematical topics in an integrated way.
- f. Use of typical characteristics of Indonesian nature and cultures: IRME is implemented according to the Indonesian students' development's characteristics and Indonesian culture.

In the study of mathematics, teachers should not only facilitate students who have intelligence logical-mathematics, but also facilitates students with other intelligences. There are eight

intelligences-identified by Howard Gardner. Each intelligence has its own characters. The characters of the eight intelligences identified by Howard Garner are (Hoerr, Boggeman & Wallach, 2010):

a. Interpersonal

Students who have interpersonal intelligence can enjoy friend and social activities. They always enjoys cooperative games, demonstrates empathy toward others, has lots of friends, is admired by peers, has leadership skill, enjoy and prefer at group problem solving, can mediate conflicts well, understand and recognized stereotypes and prejudices.

b. Intrapersonal

Interpersonal students are successful because they know their abilities, their options and understand themselves. Characteristics students with interpersonal intelligences are pursue personal interests, set realistic goals, identify and label feelings, sense their own strengths and weaknesses, daydream, are insightful and reflective, are intuitive, follow their instincts, are comfortable with themselves, express a sense of justice and fairness.

c. Bodily/kinaesthetic

Students with bodily/kinaesthetic intelligence process information through the sensations they feel in their bodies. They like move around, moving out, likes to figure out how things works, prefer to communicate information by demonstrating or modelling.

d. Verbal/Linguistic

Students who have verbal intelligence can learn by listening. Characteristics this intelligence are good at reading and writing, spells easily, enjoy word game, has well-developed auditory skills, easily incorporates descriptive language, easily remembers written and spoken information, good story teller, uses complex sentences structure, often enjoys the sounds and rhythms of language, love to debate.

e. Logical/mathematical

Logical/mathematical intelligence includes scientific ability and often called "critical thinking". Characteristic of logical/mathematical intelligence are like to do things with data, shapes and pattern, is able to move from the concrete to the abstract easily, use information to solve a problem, enjoy computer game and puzzles, like to experiment in a logical way.

f. Musical/rhythmic

Students who have musical/rhythmic intelligence are sensitive to sound, environmental as well as musical. They enjoys singing and playing musical instruments, mimics beat and rhythm, notice background and environmental sound, sensitive to melody and tone, have a rich understanding of musical structure, rhythm, and notes.

g. Visual/Spatial

Students who have visual/spatial intelligence are tend to think in pictures and learn best from visual. They would be very interested while learning is presented through movies, pictures, videos, and demonstrations using models and props. They are good at reading maps, diagrams, solving mazes and think in three-dimensional term.

h. Naturalist

Students with this kind of intelligence focused on the ability to recognize and discriminate flora and fauna. They are interested learn by observation and discovery of natural phenomenon.

In reality, not all students have the dominant logical-mathematical intelligence. In the study of mathematics teachers not yet facilitate students with other intelligences so do not be surprised if

the mathematics becomes an unpleasant lesson. According to Gardner (Min & Othman, 2011) there are many ways to motivate children, depending on how they learn. Meaningful material could push pupils' natural curiosity about the world around them. It is suitable with characteristics of IRME. Through IRME teacher could facilitate students' MI in the class. The standard process of learning using IRME is starts learning process by presenting problems that is "real" for students that are according to the experience and knowledge of students.

When presenting problems for students, teachers can choose the context that facilitates the MI of the students. Through the intertwining principles of mathematics concepts, aspects, and units in every mathematics' learning, teacher will easier to organize the material. Teachers could integrate the same topic among some subjects in elementary school. Through this integration teachers would not only focus on the logical-Mathematic intelligence but teachers could also facilitate other intelligences while learning mathematics.

Teachers could develop students' linguistic and interpersonal intelligences through student activity and interactivity in the learning process. Students communicate and discuss their ideas, even up to negotiate and confirm each other. This process of course would develop students' ability to communicate and interact in their communities.

2. Mathematics Activities Creating Multiple Intelligences.

Through IRME teacher could facilitate different intelligences in the same class. Here is an example of learning using IRME approach which could facilitate MI in elementary school. The workflow of the Learning framework as follows (Domensia, 2008:38):

Purpose:

Develop numeracy skills of elementary school students in grade 2.

Procedure:

- a. *Prior to learning, students are invited to dance while singing a traditional children song entitled "kupu kuwi tak encupe" the lyric is:*
Kupu kuwi tak encupe
Meng abure ngewohake
Ngalor, ngidul, ngetan bali ngulon
Mrono mreng mung sak paran-paran
Mbok yo mencok tak encupe
Mencok-mencok jegrok banjur mabur kleper.
- b. Teacher tells about the life cycle of a butterfly and then discusses the pattern of spots on butterfly's wings.
- c. Students are asked to make butterfly wings from papers and draw it. In this activity, students would use the experience from results of the discussion regarding the pattern of spots on butterfly wings.
- d. Students make butterfly wings with a certain pattern of spots. Students set spots on butterfly wings that have been made, and then draw it.
- e. Various kinds of spots arrangement that made by the students are discussed in class. Each student presents their idea.
- f. Give the students a few pair of butterfly wings. Students are asked to find the right pairs and

give it numbers.

- g. Students got the card number (1-10) and cards with a picture of butterfly with certain spots pattern. Teacher shows a number, and then the student shows a picture card with a butterfly which the spots pattern corresponding to the number. Then the teacher shows a picture card, children show the corresponding numbers.

Multiple Intelligences Extensions:

- a. Kinesthetic: *Prior to learning*, students dancing accompaniment by “*kupu kuwi tak encupe*” song.
- b. Musical: Students sing “*kupu kuwi tak encupe*” song.
- c. Linguistic: Students listen to a story about the life cycle of a butterfly. Students explain their ideas to the class.
- d. This lesson also incorporates the Spatial Intelligence. Students draw butterflies, pressed spots pattern on butterfly picture. Students present the numbers in the picture of butterfly’s spots pattern.
- e. Logical-Mathematical: Students see patterns and relationships between the numbers and spots pattern of a butterfly.
- f. Naturalist: Students together with the teacher discussing about the spots pattern on butterfly’s wings.

C. CONCLUSION

Indonesian realistic mathematics education that used contexts for phenomenologist exploration with Indonesian nature and cultures makes teacher could teach mathematics with learning activities that can facilitated students’ multiple intelligences easily. Students’ activity and interactivity in the learning process could facilitate students to develop their interpersonal and verbal/linguistic intelligences. Interpersonal intelligence develops through discussion and sharing the invention strategy among students during the learning process. Verbal/linguistic intelligence develops through students’ activity when they write and present the result of mathematics problem.

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