ARTIKEL
PENELITIAN HIBAH KOMPETENSI

JUDUL:

PENGUKURAN KREATIVITAS KETERAMPILAN PROSES SAINS TERHADAP FENOMENA KEHIDUPAN DALAM MATA PELAJARAN IPA DI SEKOLAH DASAR

Tahun ke-2 dari rencana 3 tahun

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PENGUKURAN KREATIVITAS KETERAMPILAN PROSES SAINS ASPEK KEHIDUPAN PADA MATA PELAJARAN IPA SD (CREATIVITY'S MEASUREMENT OF SCIENCE PROCESSING SKILLS ON LIFE ASPECTS OF NATURAL SCIENCES SUBJECT AT ELEMENTARY SCHOOL)

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ABSTRAK: Penelitian ini bertujuan mengembangkan tes kreativitas keterampilan proses sains (KPS) aspek kehidupan pada IPA SD menggunakan item yang *fit* dengan *Partial Credit Model* serta untuk mengetahui penguasaan kreativitas KPS testi. Penelitian ini kelanjutan penelitian tahap I yang telah diawali dengan mengembangkan *learning continuum* KPS, menyusun item, telaah pakar, uji coba pada 637 testi Kelas V dan VI menggunakan penskoran model divergen. Hasilnya satu dari 63 item kurang *fit* mengikuti batas *Infit* MNSQ, namun *fit* jika mengikuti batas *Infit* t. Skor mentah 3 sampai 82, rata-rata 49,89 dari skor maksimum 126. Pada penelitian ini dilakukan pemisahan item menjadi 4 perangkat tes. Tiap perangkat tes dilengkapi *anchor item*, tiap peserta didik hanya mengerjakan satu perangkat tes yang terdiri atas 20 item dengan dua jawaban benar. Penskoran menggunakan pola penskoran kreatif, satu jawaban benar ≤20% diberi skor 3, >20%-40% diberi skor 2, dan >40% diberi skor 1. Empat perangkat tes diujikan pada peserta didik kelas IV dan V. Tes I diikuti oleh 783 testi, tes II diikuti oleh 764 testi, tes III diikuti 763 testi, dan tes IV diikuti 760 testi. Hasilnya, seluruh item fit dengan model, namun ada 1 item yang hanya sampai skor 4 dan 1 item yang hanya sampai skor 2 dari skor maksimum 6 tiap item. Skala logit tingkat kesulitan item rata-rata 0,0 ± 0,28 sementara kemampuan testi hanya mencapai rata-rata -0,63 ± 0,18. Uji coba buku panduan diikuti 30 guru dan pengawas, dan hasil tes pemahaman untuk guru mencapai skor 71,4 dan pengawas 68,8.

Kata Kunci: kreativitas, keterampilan proses sains, *partial credit model*.

(Key word: creativity, science process skills, partial credit model.)

PENDAHULUAN

A. Latar Belakang Masalah

Hakekat belajar Ilmu Pengetahuan Alam (IPA) melatih peserta didik mampu melakukan investigasi baru terhadap fenomena alam untuk menemukan produk ilmiah yang baru melalui proses ilmiah berlandaskan sikap ilmiah. Produk ilmiah baru dapat berupa fakta, konsep, geberalisasi, prinsip, teori dan hukum Proses investigasi melibatkan berbagai keterampilan proses sains seperti keterampilan mengamati, mengoleksi data, mengukur, mengorganisasikan

data, menglasifikasi, merumuskan hipotesis, memprediksi, melakukan percobaan, menganalisis data, menginferensi, membuat model, dan berkomunikasi secara ilmiah (Carin & Sund, 1989: 6). Proses ilmiah yang disusun dalam urutan tertentu dan digunakan untuk memecahkan suatu permasalahan disebut metode ilmiah (Towle, 1989: 16-31).

Chiapetta (1997:22) menyatakan bahwa peserta didik harus diarahkan aktif melakukan inquiri dalam pembelajaran sains. Di dalamnya dengan menerapkan berbagai strategi dan teknik untuk membantu peserta didik berpikir dan memperoleh sesuatu melalui berbagai pertanyaan, kesenjangan, keterampilan proses, aktivitas deduktif dan induktif, pencarian informasi, dan pemecahan masalah. Pembelajaran inkuiri akan melatih peserta didik mampu melakukan investigasi (Edwards, 1997:18).

Lampiran Peraturan Menteri Pendidikan nasional (Permendiknas) Nomor 22 Tahun 2006 tentang Standar Isi Pendidikan Dasar dan Menengah (2006: 484) menyuratkan bahwa IPA berhubungan dengan cara mencari tahu tentang alam secara sistematis, sehingga IPA bukan hanya penguasaan kumpulan pengetahuan yang berupa fakta-fakta, konsep-konsep, atau prinsip-prinsip saja tetapi juga merupakan suatu proses penemuan atau inkuiri. Pembelajaran IPA sebaiknya dilaksanakan secara inkuiri ilmiah (*scientific inquiry*) untuk menumbuhkan kemampuan berpikir, berkreasi, bekerja, dan bersikap ilmiah serta mengkomunikasikannya sebagai aspek penting kecakapan hidup.

Di dalam Lampiran Menteri Pendidikan dan Kebudayaan No 64 Tahun 2013 tentang tentang Standar Isi Pendidikan Dasar dan menengah Kurikulum 2013 (2013: 65-66) tertulis Standar Isi disesuaikan dengan substansi tujuan pendidikan nasional dalam domain sikap spiritual dan sikap sosial, pengetahuan, dan keterampilan. Oleh karena itu, Standar Isi dikembangkan untuk menentukan kriteria ruang lingkup dan tingkat kompetensi yang sesuai dengan kompetensi lulusan yang dirumuskan pada Standar Kompetensi Lulusan, yakni sikap, pengetahuan, dan keterampilan. Ketiga kompetensi tersebut memiliki proses pemerolehan yang berbeda. Sikap dibentuk melalui aktivitas-aktivitas: menerima, menjalankan, menghargai, menghayati, dan mengamalkan. Pengetahuan dimiliki melalui aktivitas-aktivitas: mengetahui, memahami, menerapkan, menganalisis, mengevaluasi, dan mencipta.

Meskipun dalam taksonomi Bloom menurut Anderson & Krathwohl (2001) mencipta atau berkreasi didudukkan sebagai kemampuan tertinggi ranah kognitif namun tidak berarti bahwa berkreasi tidak dapat diajarkan kepada peserta didik di SD. Hal ini didukung oleh pendapat

Miller (2005:65) yang membuat difinisi kreatif secara sederhana yaitu sesuatu yang bukan hasil duplikasi/tiruan dikategorikan sesuatu yang kreatif. Michalko (2000: 18-21) juga menyatakan bahwa berpikir kreatif dapat diwujudkan berupa kemampuan melakukan (a) substitusi/penggantian, (b) mengkombinasikan, (c) menyesuaikan pada situasi lain, (d) memodifikasi, memperbesar, atau menambahkan, (e) menempatkan sesuatu untuk penggunaan yang lain, (f) mengeliminasi atau mengurangi, dan (g) menyusun kembali atau memutarbalikkan.

Hasil pengukuran kreativitas keterampilan proses sain (KPS) di SMA yang dilakukan Bambang Subali tahun 2010 pada Mata Pelajaran Biologi SMA tahun 2010 oleh Bambang Subali sebagai penelitian mandiri. Penelitian dilakukan di DIY dan Jawa Tengah. Hasilnya menunjukkan bahwa terbukti memiliki dukungan empiris menunjukkan kreativitas yang bergradasi meningkat dari kelas X, kelas XI IPA, dan kelas XII IPA. Namun relatif masih rendah kemampuannya. Hasil penelitian ini telah dipublikasikan melalui jurnal yakni Jurnal Cakrawala Pendidikan Tahun XXX, No. 1, Februari 2011 dengan judul Pengukuran Kreativitas Keterampilan Proses Sains dalam Konteks *Assessment For Learning*. Bagaimana penguasaan kreativitas KPS di SD khususnya yang berkaitan dengan aspek kehidupan pada mata pelajaran IPA SD perlu diteliti. Penelitian tahun I yang sudah dilakukan menunjukkan bahwa pada umunya guru telah mengajarkan kreativitas keterampilan proses sains (KPS) dan disertai dengan pemberian contoh. Bagimana penguasaan kreativitas KPS menjadi tujuan utama penelitian ini. Dalam hal ini pembakuan instrumen yang sudah dirintis pada tahap I dibakukan lebih lebih lanjut pada tahap II.

A. Tujuan Penelitian

Tujuan penelitian pada tahap II hibah kompetensi ini selain mengembangkan tes kreativitas KPS aspek kehidupan pada mata pelajaran IPA SD disertai dengan pembakuan lanjut instrumen pengukurnya juga mengembangkan panduan pengukurnya. Namun dalam artikel ini difokuskan pada pengembangan instrumen beserta hasil pengukurannya. Pengembangan item pengukurnya diuji kecocokannya (fit) dengan model Partial Credit Model (PCM).

KAJIAN PUSTAKA

Kemampuan pada diri manusia dalam taksonomi Bloom dipisahkan menjadi tiga domain, yakni domain (a) kognitif, (b) afektif, dan (c). psikomotor. Dettmer (2006:71-73) merumuskan

taknomomi Bloom menjadi empat domain yaitu domain (a) kognitif, (b) afektif, (c) sensorimotor (sebagai pengganti psikomotor), dan (d) sosial. Keempat domain tersebut sebagai aktualisasi dalam pembelajaran membentuk satu kesatuan (*unity*). Kemampuan berkreasi merupakan bagian dari aspek kognitif selain jenjang mengetahui, memahami, mengaplikasikan, menganalisis, mengevaluasi, menyintesis, dan berimajinasi.

Pembelajaran kreatif dalam mata pelajaran IPA dapat diajarkan melalui inquiri ilmiah guna menumbuhkan kemampuan berpikir, termasuk di dalamnya adalah kemampuan berpikir untuk menemukan berbagai hal selama menerapkan keterampilan proses sains secara ilmiah. Dalam konteks pengembangan kreativitas pada diri peserta didik, Cochran & Lytle (2006: 668-693) menyatakan perlunya untuk menciptakan lingkungan yang kondusif yang benar-benar mendukung kegiatan belajar berarti menciptakan berbagai alternatif yang sesuai dengan kebutuhan peserta didik selama belajar. Peserta didik dikondisikan agar lebih dimungkinkan untuk menemukan diri mereka sendiri dan berusaha menjawab pertanyaan mereka sendiri, bukan sekedar menjawab dengan cara dihafal tanpa pikir, dan memungkinkan peserta didik aktif dengan gagasan mereka.

Pembelajaran menulis sejarah dapat untuk meningkatkan kemampuan berpikir kretif dan kitis (Richert, 2002:57). Hal serupa juga berlaku dalam IPA karena kemampuan berpikir kretaif dan kritis peserta didik dalam belajar IPA juga dapat dikembangkan dengan cara menuliskan pengalaman dan imajinasi mereka berkaitan dengan semua fenomena alam bahkan sampai pada untuk secara naratif menjelaskan latar belakangnya.

Untuk dapat menemukan solusi kreatif akan maka harus diawali dengan membangkitkan ide-ide baru kemudian ide-ide baru tersebut harus dilanjutkan dengan mengembangkannya ke dalam kerja untuk memecahkan masalah (Sheppard et.al., 2006: xvi). Agar supaya dapat memecahkan masalah secara kreatif maka diperlukan beberapa prinsip dasar di antaranya (1) bahwa inovasi memerlukan fokus, tanpa fokus, gagasan kreatif tidak pernah sampai pada membuat solusi yang bermakna, (2) menggunakan “fuzzy logic” berupa gagasan yang tidak sempurna atau yang belum pasti untuk bergerak maju dan membuat keputusan, (3) mengembangkan solusi secara bertahap untuk mengatasi permasalahan dengan memanfaatkan kemampuan dan komitmen tanpa mengenal waktu, (4) memposisikan diri sebagai pebelajar yang mau selalu belajar mencari pengetahuan baru/yang lain dari yang biasa dikenal Agar mampu

melakukan itu semua, maka kreativitas harus dikembangkan secara bertahap mulai dari memikirkan hal yang jarang dipikirkan orang lain (Sheppard *et.al*., 2006:10).

Proses pemecahan masalah secara kreatif diawali dengan fase peningkatan antisipasi, kemudian masuk ke fase proses mempertemukan atau menandingkan dan menggali harapan-harapan yang diinginkan dan yang tidak diinginkan. Fase kedua ini ditandai oleh adanya proses diagnostik di dalam otak dalam menghadapi kesulitan, dalam mengintegrasikan berbagai informasi yang tersedia, mengecek kembali informasi, mengelaborasi, dan dalam memilah informasi. Dengan demikian, terjadi proses konvergen dan divergen. Kemudian diakhiri dengan fase ketiga yang ditandai adanya kemampuan untuk melampaui hambatan yang ada (Torrance, 1979: 241-246)

Hasil belajar yang berbeda justru diharapkan, dan dorongan diberikan kepada setiap peserta didik untuk dapat memenuhinya. Pembelajaran ideasional sebagaimana direkomendasikan oleh Dettmer (2006: 73) yang dasarnya adalah berbasis gagasan dari masing-masing peserta didik seharusnya dapat dirintis pada seluruh sekolah karena tidak selamanya bahwa anak yang kreatif adalah anak yang cerdas.

METODE PENELITIAN

Penelitian dilakukan dengan melanjutkan penelitian tahap pertama dengan tahapan prosedur pengembangan yang telah diawali dengan mengembangkan *learning continuum* KPS, menyusun item, telaah pakar, uji coba pada 637 testi Kelas V dan VI menggunakan penskoran model divergen.

Instrumen tes kreativitas keterampilan proses sains (KPS) yang disusun memuat aspek keterampilan dasar dan keterampilan mengolah/memroses. Rumusan aspek KPS tersebut mengacu kepada rumusan *learning continuum* KPS dirumuskan Bambang Subali tahun 2009. Rumusan *learning continuum* keterampilan yang dirumuskan oleh bambang Subali tahun 2009 mengacu pada beberapa sumber yakni Rezba et.al. (2007), Bryce et.al. (1990), dan Cox (1956). Berikut aspek dan subaspek KPS yang diukur dalam hal kreativitasnya kaitannya dengan aspek kehidupan dalam mata pelajaran IPA SD.

ASPEK/SUBASPEK KREATIVITAS KETERAMPILAN PROSES SAINS

I. Keterampilan Dasar (basic skill)
1. Keterampilan mengamati
1.1. Memilih dan mencocokkan sendiri objek berupa makhluk hidup dengan gambarnya
1.2. Memilih/ menentukan sendiri jenis makhluk hidup yang akan diamati perubahan bagian tubuhnya berdasarkan warna, bentuk, dan tingkatan
1.3. Mengidentifikasi/ mengenali sendiri keadaan yang berpotensi penuh risiko ketika melakukan pengamatan/ percobaan di sekolah dengan yang sama dengan keadaan sehari-hari di rumah
1.4. Memilih sendiri gejala yang akan dibandingkan bila dihadapkan pada dua macam makhluk hidup untuk mengidentifikasi perbedaan secara terperinci
1.5. Mencocokkan sendiri gambar suatu makhluk hidup dengan yang sesungguhnya atau sebaliknya untuk mengetahui keragaman penampakannya
1.6. Mengidentifikasi/ mengenali sendiri dampak teknologi di alam, di suatu areal, atau di dalam gambar foto (anchor 4 perangkat tes)
1.7. Memilih/ mengidentifikasi/ mengenali sendiri nama/jenis hewan berdasarkan suara hewan yang didengar
2. Keterampilan merekam data/informasi
2.1. Menyajikan sendiri data dalam bentuk tabel lengkap dengan labelnya
2.2. Membuat sendiri ringkasan suatu paragraf/bab/buku yang mengulas gejala kehidupan makhluk hidup
2.3 Membuat sendiri bagan/diagram suatu gejala kehidupan makhluk hidup secara benar lengkap dengan labelnya
2.4. Menentukan sendiri tubuh atau bagian tubuh makhluk hidup yang akan digambar dan digambar dengan akurat
2.5. Membuat histogram tentang gejala kehidupan makhluk hidup lengkap dengan labelnya
2.6. Membuat suatu tulisan yang berisi informasi tentang hasil pengamatan kehidupan suatu makhluk hidup lengkap dengan judulnya
2.7. Melengkapi sendiri suatu bagan/carta, grafik atau histogram tentang fenomena kehidupan makhluk hidup
2.8. Membuat sendiri suatu bagan/carta, grafik atau histogram tentang kehidupan makhluk hidup
2.9. Menyampaikan sendiri informasi tentang ciri suatu makhluk hidup yang tersaji dalam bentuk bagan/carta, grafik atau histogram

Atas dasar rumusan aspek-aspek KPS tersebut kemudian disusun kisi-kisi tes kreativitas yang telah ditelaah oleh dua pakar pendidikan biologi dari UNY dan praktisi pengawas SD.

Pada penelitian tahap I telah tersusun dan diujicobakan 63 item yang dikemas dalam tiga perangkat tes yang ditempuh oleh setiap testi. Item berupa bentuk uraian dan ditujukan untuk mengukur kemampuan kreativitas KPS yang berkaitan dengan aktivitas kehidupan. Kemampuan kreativitas KPS yang diukur yaitu aspek keterampilan dasar dan keterampilan mengolah/memroses saja. Aspek keterampilan dasar mencakup keterampilan (a) mengamati, (b)

merekam data/informasi, (c) mengikuti instruksi, (d) mengklasifikasi, (e) mengukur, (f) memanipulasi gerak, dan (g) menerapkan prosedur atau cara penggunaan peralatan. Aspek keterampilan mengolah/memroses mencakup keterampilan (a) menginferensi, (b) memprediksi, dan (c) menyeleksi prosedur. Dalam tes I kriteria kreatif adalah jika testi dapat memberikan jawaban divergen atas item yang diujikan.

Sampel testi pada penelitian tahap I sebanyak 637 testi. Jumlah ini memenuhi syarat bahwa untuk uji coba tes yang idealnya minimal sebanyak 500 testi agar suatu perangkat tes dapat digunakan secara operasional (Muraki & Bock, 1998:35). Hasilnya satu dari 63 item kurang *fit* mengikuti batas *Infit* MNSQ, namun *fit* jika mengikuti batas *Infit* t. Skor mentah 3 sampai 82, rata-rata 49,89 dari skor maksimum 126.

Pada penelitian tahap II ini dilakukan pemisahan item menjadi 4 perangkat tes. Tiap perangkat tes dilengkapi *anchor item*, dan tiap peserta didik hanya mengerjakan satu perangkat tes. Tiap persangkat tes terdiri atas 20 item dengan dua jawaban benar.

Penskoran kreatif mengacu model Diakidoy & Constantinou (Kind & Kind, 2007). Penskalaan yang digunakan Diakidoy & Constantinou menggunakan model penskalaan untuk mengukur proses divergen dari kemampuan kreativitas dari Guilford. Dalam penelitian ini, penskoran kreatif dialakukan dengan cara yaitu satu jawaban benar ≤20% diberi skor 3, >20%-40% diberi skor 2, dan >40% diberi skor 1. Seluruh item kemudian diuji *fit* item terhadap *Partial Credit Model*. Karena setiap item memiliki 2 jawaban benar maka skor maksimum 6 sehingga analisis item menggunakan skala politomus 7 kategori.

Sampel testi berasal dari 10 Unit Pelaksana Teknis/Unit Pelaksana Teknis daerah UPT/UPTD) di 5 kabupaten/kota di Provinsi DIY. Setiap kabupaten/kota dipilih secara purposif 2 UPT/UPTD. Satu UPT/UPTD berlokasi di pusat pemerintahan dan 1 UPT/UPTD berlokasi jauh dari pusat pemerintahan. Dalam hal ini, kecuali UPT di Kota Yogyakarta yang keduanya ada di kota. Setiap UPT/UPTD ditetapkan 2 SD Swasta dan 4 SD Negeri. Peserta tes adalah peserta didik kelas IV dan kelas V. Tes dilaksanakan pada bulan Juni menjelang kenaikan kelas.

Data hasil tes dianalisis menggunakan analisis item menggunakan program Quest (Adam & Kho, 1996) dengan penskalaan politomus tujuh kategori. Pengujian *fit* item terhadap model yaitu terhadap Partial Credit Model berdasarkan besarnya nilai *Infit Mean Square* (*Infit* MNSQ) pada kisaran 0,77 sampai 1,30 (Wright & Masters, 1982). Karena seluruh jawaban tiap item yang benar bersifat independen satu dengan yang lain maka sifatnya *unconditional* sehingga peluang

jawaban benar yang muncul sebesar 0.5. Hasil analisis tersaji dalam bentuk tingkat kesulitan item (item difficulty) dan nilai *threshold* yang terendah ke tertinggi karena setiap pemunculan baru bertambah tingkat kesulitannya. Hasil analisis juga menyajikan kemampuan rata-rata testi (*mean ability*) serta *ability* tiap *step thresholds* beserta nilai *step threshold*. *Step threshold* tersasji mulai dari skor 0 ke skor 1, skor 1 ke skor 2 dan seterusnya sampai dari skor 5 ke skor 6 sebagai skor tertinggi.

HASIL PENELITIAN

Setelah keempat perangkat tes diujikan pada peserta didik kelas IV dan V di 10 UPT/UPTD dan tiap UPT/UPTD sebanyak 6 SD, jumlah seluruhnya sebanyak 3060 testi (testi penempuh tes I sebanyak 783, penempuh tes II sebanyak 764, penempuh tes III sebanyak 753, dan penempuh tes IV sebanyak 760. Data dianalisis menggunakan Program Quest secara simultan/gabungan dan secara terpisah. Adapun hasilnya adalah sebagai berikut.

Tabel 1a. ***Summary of Item Estimates***

Aspek	*Gabungan*	*Tes I*	*Tes II*	*Tes III*	*Tes IV*
N	*3060*	*783*	*764*	*753*	*760*
L	*65*	*20*	*20*	*20*	*20*
Mean	*0.03*	*0.08*	*0.01*	*0.02*	*0.02*
SD	*0.23*	*0.40*	*0.21*	*0.31*	*0.28*
SD (adjusted)	*0.22*	*0.39*	*0.18*	*0.30*	*0.27*
Reliability of estimate	*0.89*	*0.93*	*0.73*	*0.93*	*0.90*

Tabel 1b. ***Fit Statistics***

Aspek	***Mean Square (MSQ)***									
	Gabung		***Tes I***		***Tes II***		***Tes III***		***Tes IV***	
	Infit	***Outfit***	***Infit***	***Outfit***	***Infit***	***Outfit***	***Infit***	***Outfit***	***Infit***	***Outfit***
Mean	*1.00*	*0.99*	*1.02*	*1.06*	*1.00*	*0.99*	*1.00*	*1.03*	*1.00*	*1.00*
SD	*.04*	*0.18*	*0.10*	*0.21*	*0.08*	*0.14*	*0.10*	*0.17*	*0.09*	*0.13*
	t									
Mean	*0.01*	*-0.22*	*0.05*	*0.28*	*0.05*	*-0.02*	*-0.01*	*0.12*	*-0.08*	*0.05*
SD	*1.43*	*2.52*	*1.68*	*1.64*	*1.64*	*1.29*	*2.47*	*1.98*	*2.11*	*1.85*
Items with zero scores	*0*		*0*		*0*		*0*		*0*	
items with perfect scores	*0*		*0*		*0*		*0*		*0*	

Tabel 1a menunjukkan bahwa nilai reliabilitas estimasi untuk estimasi item, yang tidak lain adalah reliabilitas sampel untuk tes gabungan sebesar 0.89 menunjukkan bahwa hampir semua sampel testi yang diuji fit atau cocok dengan seluruh item yang diujikan. Demikian pula ketika hasil ujian dianalisis untuk tiap perangkat tes, yang rendah hanya pada tes II dan itupun masih menunjukkan angka 0.73. Namun, semua item juga tidak ada yang memiliki skor 0. Artinya tidak ada item yang sama sekali tidak dapat dikerjakan testi. Pengujian fit terhadap reliabilitas sampel sebagaimana tersaji pada Tabel Ib menunjukkan bahwa hampir semua item fit dengan model karena nilai *Infit Mean of Square* (*Infit*MNSQ) 1,00 namun standar deviasinya (SD) 0.04 memenuhi kriteria yang seharusnya dengan *Infit*MNSQ sebesar 1,0 dan SD sebesar 0.0 dan (Wright & Masters, 1982: 108-109). Demikian pula ketika dianalisis secara terpisah, harga Infit MNSQ semua mendekati 1.00 dan simpangan baku sekitar 0.10.

Hasil analisis item berupa *case estimate* disajikan pada Tabel 2a dan 2b berikut.

Tabel 2a. ***Summary of Case Estimates***

Aspek	*Gabungan*	*Tes I*	*Tes II*	*Tes III*	*Tes IV*
N	*3060*	*783*	*764*	*753*	*760*
L	*65*	*20*	*20*	*20*	*20*
Mean	*-0.63*	*-0.14*	*-0.48*	*-0.36*	*-0.27*
SD	*0.18*	*0.27*	*0.33*	*0.25*	*0.29*
SD (adjusted)	*0.14*	*0.23*	*0.28*	*0.22*	*0.26*
Reliability of estimate	*0.62*	*0.74*	*0.73*	*0.72*	*0.78*

Tabel 2b. ***Fit Statistics***

Aspek	***Mean Square (MSQ)***									
	Gabung		***Tes I***		***Tes II***		***Tes III***		***Tes IV***	
	Infit	***Outfit***	***Infit***	***Outfit***	***Infit***	***Outfit***	***Infit***	***Outfit***	***Infit***	***Outfit***
Mean	*1.01*	*0.99*	*1.01*	*1.06*	*1.02*	*0.99*	*1.02*	*1.03*	*1.02*	*1.00*
SD	*0.19*	*0.40*	*0.36*	*0.77*	*0.29*	*0.40*	*0.29*	*0.55*	*0.28*	*0.35*
	T									
Mean	*0.11*	*0.11*	*0.02*	*0.18*	*0.08*	*0.14*	*0.05*	*0.12*	*0.05*	*0.08*
SD	*0.53*	*0.63*	*1.04*	*0.77*	*0.86*	*0.64*	*0.99*	*0.72*	*0.96*	*0.70*
Cases with zero scores	*13*		*3*		*5*		*0*		*7*	
Cases with perfect scores	*0*		*0*		*0*		*0*		*0*	

Tabel 2a menunjukkan bahwa dengan nilai reliabilitas estimasi untuk estimasi person (*case estimate*), yang tidak lain adalah reliabilitas tes, menunjukkan angka sebesar 0.62

menunjukkan bahwa jika dilakukan pengulangan tes akan menghasilkan hasil yang stabil. Ketika dipisah menjadi empat perangkat tes, reliabilitas *error of measurement* semuanya di atas 0.7. Pengujian fit terhadap reliabilitas tes sebagaimana tersaji pada Tabel 2b menunjukkan bahwa berdasarkan besarnya nilai realiabilitas tes yang didasarkan pada *error of measurement* dengan nilai *Infit*MNSQ 1.01 namun standar deviasinya (SD) 0.19 sudah mendekati standar yang seharusnya yakni *Infit*MNSQ sebesar 1.0 dan SD sebesar 0.0 (Wright & Masters, 1982: 115-117). Nilai reliabilitas tes menggunakan pendekatan teori tes klasik hasil perhitungan menggunakan program Quest menunjukkan nilai *internal consistency* sebesar 0,51. Jadi masih pada kategori sedang karena berada di atas batas ketentuan umum 0,3.

Kemampuan rata-rata testi (*ability*), tingkat kesukaran tiap item (*item difficulty*), dan *step threshold* tiap item serta pengujian *fit* item dengan model PCM dengan penskalaan politomus tujuh kategori disajikan pada Tabel 3. Tabel 3 menunjukkan bahwa dari 65 item semua *fit* atau sesuai dengan model PCM tujuh kategori jika didasarkan pada nilai Infit MNSQ sebagaimana yang diperssyaratkan Adam & Kho (1996). Namun, ada dua item yang tidak memiliki *step threshold* sampai skor 6, yakni item nomor "2.3 Membuat sendiri bagan/diagram suatu gejala kehidupan makhluk hidup secara benar lengkap dengan labelnya" yang hanya sampai pada *step threshold* 2. Artinya, jika testi memberikan 1 jawaban benar dan diberikan oleh >20 - 40% testi atau ada 2 jawaban dan keduanya diberikan oleh >40% testi. Item nomor "2.1. Menyajikan sendiri data dalam bentuk tabel lengkap dengan labelnya" juga hanya sampai pada *step threshold* 4. Artinya, Testi dipastikan testi memberikan 2 jawaban benar dengan kombinasi skor 3+1 (jawaban pertama diberikan oleh ≤20% dan jawaban kedua diberikan oleh > 40% testi) atau kombinasi skor 2+2 (baik jawaban pertama maupun yang kedua diberikan oleh >20 - 40% testi).

Tabel 3. Kemampuan rata-rata testi (*ability*), tingkat kesukaran tiap item (*item difficulty*), dan *step threshold* tiap item serta pengujian *fit* item dengan model PCM dengan penskalaan politomus tujuh kategori

Nomor Item	Difficulty	Aspect		Step						Infit MNSQ	KET.
				1	2	3	4	5	6		
I. Keterampilan dasar (*basic skill*)											
1. Keterampilan mengobservasi											
1.1	0.49	Mean Ability	-0.6	-0.52	NA	-0.54	-0.49	NA	-0.51	` .97	*Fit*
		Thresholds		-0.04	-0.02	-0.02	0.13	0.24	0.24		
1.2	-0.33	Mean Ability	-0.82	NA	-0.72	-0.68	NA	-0.6	-0.6	1.13	*Fit*
		Thresholds		-0.24	-0.24	-0.21	-0.11	-0.11	0.09		
1.3	-0.18	Mean Ability	-0.73	NA	NA	-0.59	NA	NA	-0.52	0.99	*Fit*
		Thresholds		-0.24	-0.24	-0.24	-0.11	-0.11	-0.11		
1.4	-0.02	Mean Ability	-0.76	-0.7	NA	-0.63	-0.6	NA	-0.57	1.06	*Fit*
		Thresholds		-0.27	-0.22	-0.22	-0.16	0.3	0.3		
1.5	0.09	Mean Ability	-0.65	NA	NA	-0.56	NA	NA	-0.5	0.98	*Fit*
		Thresholds		-0.03	-0.03	-0.03	0.2	0.2	0.2		
1.6 (anchor)	-0.67	Mean Ability	-0.67	NA	-0.58	-0.58	NA	-0.53	-0.54	0.99	*Fit*
		Thresholds		-0.52	-0.52	-0.49	-0.12	-0.12	0.08		
1.7	-0.33	Mean Ability	-0.75	NA	-0.56	-0.59	NA	NA	-0.56	1.07	*Fit*
		Thresholds		-0.41	-0.41	-0.4	-0.39	-0.39	-0.39		
2. Keterampilan merekam data/informasi											
2.1.	0.32	Mean Ability	-0.8	-0.74	-0.64	-0.6	-0.59	NA	NA	1.04	*Fit*
		Thresholds		0.07	0.12	0.54	0.57				
2.2.	-0.05	Mean Ability	-0.72	NA	NA	-0.57	NA	NA	-0.53	1	*Fit*
		Thresholds		-0.14	-0.14	-0.14	0.04	0.04	0.04		
2.3	0.24	Mean Ability	-0.74	-0.61	-0.55	NA	NA	NA	NA	0.98	*Fit*
		Thresholds		0.19	0.28						
2.4	-0.02	Mean Ability	-0.77	NA	NA	-0.62	NA	NA	-0.56	1.04	*Fit*
		Thresholds		-0.1	-0.1	-0.1	0.06	0.06	0.06		
2.5	0	Mean Ability	-0.74	NA	-0.6	-0.58	NA	-0.58	-0.53	1.07	*Fit*
		Thresholds		-0.23	-0.23	-0.22	-0.17	-0.17	1.17		
2.6	-0.08	Mean Ability	-0.7	NA	NA	-0.56	NA	NA	-0.49	0.97	*Fit*
		Thresholds		-0.16	-0.16	-0.16	0	0	0		
2.7	-0.46	Mean Ability	-0.71	NA	-0.6	-0.59	NA	NA	-0.56	1.05	*Fit*
		Thresholds		-0.38	-0.38	-0.38	-0.37	-0.37	-0.37		
2.8	0.46	Mean Ability	-0.77	-0.69	-0.63	-0.61	-0.54	-0.58	-0.55	1.03	*Fit*
		Thresholds		0.09	0.16	0.19	0.62	0.77	0.89		
2.9	0.09	Mean Ability	-0.68	NA	NA	-0.56	NA	NA	-0.54	1	*Fit*
		Thresholds		-0.02	-0.02	-0.02	0.19	0.19	0.19		
3. Keterampilan mengikuti instruksi											
3.1	-0.28	Mean Ability	-0.75	NA	-0.61	-0.6	NA	-0.51	-0.51	0.98	*Fit*
		Thresholds		-0.24	-0.24	-0.19	-0.08	-0.08	0.12		
3.2	-0.06	Mean Ability	-0.62	NA	NA	-0.54	NA	NA	-0.49	0.96	*Fit*
		Thresholds		-0.17	-0.17	-0.17	0.05	0.05	0.05		
3.3	0.09	Mean Ability	-0.76	NA	NA	-0.6	NA	NA	-0.53	1.02	*Fit*
		Thresholds		-0.02	-0.02	-0.02	0.2	0.2	0.2		
3.4	-0.11	Mean Ability	-0.76	NA	NA	-0.59	NA	NA	-0.53	1.01	*Fit*
		Thresholds		-0.21	-0.21	-0.21	-0.02	-0.02	-0.02		

Lanjutan Tabel 3. Kemampuan rata-rata testi (*ability*), tingkat kesukaran tiap item (*item difficulty*), dan *step threshold* tiap item serta pengujian *fit* item dengan model PCM dengan penskalaan politomus tujuh kategori

Nomor Item	Difficulty	Aspect		Step						Infit MNSQ	KET.
				1	2	3	4	5	6		
4. Keterampilan menglasifikasi											
4.1 (anchor)	-0.51	Mean Ability	-0.69	NA	-0.59	-0.56	NA	-0.53	-0.52	0.93	*Fit*
		Thresholds		-0.56	-0.56	-0.45	-0.09	-0.09	0.11		
4.2	0.36	Mean Ability	-0.71	NA	-0.58	-0.62	-0.52	-0.51	-0.44	0.96	*Fit*
		Thresholds		-0.13	-0.13	-0.05	-0.01	0.31	2.27		
5. Keterampilan mengukur											
5.1 (anchor)	-0.43	Mean Ability	-0.72	-0.65	-0.63	-0.57	-0.56	-0.55	-0.5	0.87	*Fit*
		Thresholds		-0.72	-0.67	-0.57	-0.31	-0.23	-0.13		
5.2	-0.73	Mean Ability	-0.62	NA	-0.48	-0.53	NA	NA	-0.5	0.98	*Fit*
		Thresholds		-0.15	-0.15	-0.15	0.08	0.08	0.08		
5.3	-0.11	Mean Ability	-0.83	NA	NA	-0.64	NA	NA	-0.57	1.07	*Fit*
		Thresholds		-0.2	-0.2	-0.2	-0.03	-0.03	-0.03		
5.4	-0.01	Mean Ability	-0.7	NA	NA	-0.58	NA	NA	-0.51	1	*Fit*
		Thresholds		-0.11	-0.11	-0.11	0.09	0.09	0.09		
5.5	0.04	Mean Ability	-0.74	NA	-0.61	-0.58	-0.53	-0.5	-0.5	0.99	*Fit*
		Thresholds		-0.19	-0.19	-0.1	0.01	0.06	0.99		
5.6	-0.02	Mean Ability	-0.63	NA	NA	-0.52	NA	NA	-0.48	0.95	*Fit*
		Thresholds		-0.14	-0.14	-0.14	0.09	0.09	0.09		
5.7	0.12	Mean Ability	-0.74	NA	NA	-0.61	NA	NA	-0.56	1.02	*Fit*
		Thresholds		0.02	0.02	0.02	0.22	0.22	0.22		
5.8	0.05	Mean Ability	-0.72	NA	NA	-0.57	NA	NA	-0.51	1	*Fit*
		Thresholds		-0.09	-0.09	-0.09	0.19	0.19	0.19		
6. Keterampilan memanipulasi gerakan											
6.1	0.49	Mean Ability	-0.7	NA	NA	-0.55	NA	NA	-0.5	1	*Fit*
		Thresholds		0.46	0.46	0.46	0.52	0.52	0.52		
6.2	0.24	Mean Ability	-0.62	NA	NA	-0.52	NA	NA	-0.44	0.98	*Fit*
		Thresholds		0.21	0.21	0.21	0.26	0.26	0.26		
6.2	0.75	Mean Ability	-0.57	NA	NA	-0.48	NA	NA	-0.51	0.99	*Fit*
		Thresholds		0.65	0.65	0.65	0.86	0.86	0.86		
6.4	0.22	Mean Ability	-0.66	NA	NA	-0.55	NA	NA	-0.49	0.99	*Fit*
		Thresholds		0.13	0.13	0.13	0.32	0.32	0.32		
7. Keterampilan mengimplemetasikan prosedur/teknik/penggunaan peralatan											
7.1	0.08	Mean Ability	-0.76	NA	NA	-0.61	NA	NA	-0.55	1.02	*Fit*
		Thresholds		-0.03	-0.03	-0.03	0.19	0.19	0.19		
7.2	0.27	Mean Ability	-0.64	NA	NA	-0.6	NA	NA	-0.47	1	*Fit*
		Thresholds		0.25	0.25	0.25	0.29	0.29	0.29		
7.3	-0.23	Mean Ability	-0.74	NA	NA	-0.6	NA	NA	-0.51	0.98	*Fit*
		Thresholds		-0.27	-0.27	-0.27	-0.19	-0.19	-0.19		
7.4	0.2	Mean Ability	-0.64	-0.54	NA	-0.55	-0.5	NA	-0.51	0.97	*Fit*
		Thresholds		-0.13	-0.08	-0.08	0.01	0.27	0.27		
7.5	0.18	Mean Ability	-0.76	NA	-0.64	-0.62	NA	-0.6	-0.53	1.05	*Fit*
		Thresholds		-0.05	-0.05	0	0.12	0.12	0.98		

Lanjutan Tabel 3. Kemampuan rata-rata testi (*ability*), tingkat kesukaran tiap item (*item difficulty*), dan *step threshold* tiap item serta pengujian *fit* item dengan model PCM dengan penskalaan politomus tujuh kategori

Nomor Item	Difficulty	Aspect		Step						Infit MNSQ	KET.
				1	2	3	4	5	6		
7.6	-0.09	Mean Ability	-0.73	NA	NA	-0.59	NA	NA	-0.53	1.01	*fit*
		Thresholds		-0.18	-0.18	-0.18	0	0	0		
7.7	-0.11	Mean Ability	-0.72	NA	-0.56	-0.58	NA	-0.5	-0.51	0.97	*fit*
		Thresholds		-0.17	-0.17	-0.1	-0.02	-0.02	0.2		
7.8	-0.11	Mean Ability	0.62	NA	-0.55	-0.52	NA	-0.49	-0.46	0.96	*fit*
		Thresholds	-0.08	-0.08	-0.02	0.19	0.19	0.4	0.96	-0.7	
7.9	0.02	Mean Ability	-0.76	NA	NA	-0.62	NA	NA	-0.55	1.03	*fit*
		Thresholds		-0.07	-0.07	-0.07	0.11	0.11	0.11		
7.10	-0.06	Mean Ability	-0.69	NA	NA	-0.58	NA	NA	-0.53	1.01	*fit*
		Thresholds		-0.13	-0.13	-0.13	0	0	0		
7.11	-0.04	Mean Ability	-0.69	NA	NA	-0.53	NA	NA	-0.5	0.96	*fit*
		Thresholds		-0.13	-0.13	-0.13	0.04	0.04	0.04		
7.12	-0.25	Mean Ability	-0.66	NA	-0.55	-0.54	NA	-0.49	-0.48	0.95	*fit*
		Thresholds		-0.19	-0.19	-0.14	0.05	0.05	0.27		
7.13	0.2	Mean Ability	-0.77	NA	-0.62	-0.62	NA	-0.56	-0.57	1.03	*fit*
		Thresholds		0.03	0.03	0.18	0.32	0.32	0.56		
7.14	-0.09	Mean Ability	-0.73	NA	NA	-0.59	NA	NA	-0.56	1.03	*fit*
		Thresholds		-0.2	-0.2	-0.2	0	0	0		
II. Keterampilan mengolah/memroses											
1. Keterampilan menginferens1											
1.1	-0.2	Mean Ability	-0.62	NA	-0.57	-0.54	NA	-0.5	-0.49	0.97	*fit*
		Thresholds		-0.16	-0.16	-0.11	0.01	0.01	0.2		
1.2	0.09	Mean Ability	-0.67	-0.56	-0.54	-0.55	-0.51	NA	-0.55	0.97	*fit*
		Thresholds		-0.16	-0.08	-0.08	-0.01	0.6	0.6		
1.2a	0.14	Mean Ability	-0.85	-0.66	NA	-0.61	-0.59	NA	-0.61	1.04	*fit*
		Thresholds		-0.11	-0.03	-0.03	0.03	0.47	0.47		
1.3	-0.29	Mean Ability	-0.76	NA	NA	-0.64	NA	NA	-0.58	1.09	*fit*
		Thresholds		-0.31	-0.31	-0.31	-0.26	-0.26	-0.26		
1.3a	0.14	Mean Ability	-0.66	NA	-0.57	-0.59	NA	-0.53	-0.55	1	*fit*
		Thresholds		-0.07	-0.07	0.02	0.13	0.13	0.59		
1.4	0.36	Mean Ability	-0.66	-0.55	NA	-0.54	-0.51	NA	-0.5	0.97	*fit*
		Thresholds		-0.05	0.09	0.09	0.27	0.77	0.77		
1.5	0.06	Mean Ability	-0.73	NA	NA	-0.63	NA	NA	-0.56	1.03	*fit*
		Thresholds		0	0	0	0.12	0.12	0.12		
1.6	0.39	Mean Ability	-0.64	NA	NA	-0.59	NA	NA	-0.52	1	*fit*
		Thresholds		0.35	0.35	0.35	0.44	0.44	0.44		
1.7	-0.06	Mean Ability	-0.68	NA	NA	-0.58	NA	NA	-0.49	0.98	*fit*
		Thresholds		-0.16	-0.16	-0.16	0.03	0.03	0.03		
2. Keterampilan memprediksi											
2.1	0.08	Mean Ability	-0.69	-0.57	-0.6	-0.55	-0.53	-0.52	-0.5	0.97	*fit*
		Thresholds		-0.23	-0.19	-0.13	0.03	0.22	0.57		
2.2	-0.04	Mean Ability	-0.78	NA	NA	-0.66	NA	NA	-0.61	1.09	*fit*
		Thresholds		-0.16	-0.16	-0.16	0.08	0.08	0.08		
2.3	0.38	Mean Ability	-0.65	NA	NA	-0.58	NA	NA	-0.5	1	*fit*
		Thresholds		0.23	0.23	0.23	0.54	0.54	0.54		
2.4 (anchor)	-0.36	Mean Ability	-0.71	-0.63	-0.62	-0.63	-0.54	-0.57	-0.52	0.97	*fit*
		Thresholds		-0.98	-0.74	-0.54	-0.35	-0.18	0.56		

Lanjutan Tabel 3. Kemampuan rata-rata testi (*ability*), tingkat kesukaran tiap item (*item difficulty*), dan *step threshold* tiap item serta pengujian *fit* item dengan model PCM dengan penskalaan politomus tujuh kategori

Nomor Item	Difficulty	Aspect		Step						Infit MNSQ	KET.
				1	2	3	4	5	6		
3											
3.1	0.15	Mean Ability	-0.7	-0.67	-0.57	-0.61	-0.53	NA	-0.5	0.99	*fit*
		Thresholds		-0.13	-0.05	0.05	0.1	0.59	0.59		
3.2	-0.41	Mean Ability	-0.66	NA	NA	-0.6	NA	NA	-0.55	1.03	*fit*
		Thresholds		-0.49	-0.49	-0.49	-0.33	-0.33	-0.33		
3.3	0.08	Mean Ability	-0.59	NA	NA	-0.5	NA	NA	-0.47	0.97	*fit*
		Thresholds		0.03	0.03	0.03	0.12	0.12	0.12		
3.4	-0.1	Mean Ability	-0.68	NA	NA	-0.57	NA	NA	-0.52	0.99	*fit*
		Thresholds		-0.18	-0.18	-0.18	-0.02	-0.02	-0.02		

Perbandingan kemampuan rata-rata (*mean ability*) testi dan tingkat kesukaran item (*item difficulty*) disajikan pada Tabel 4.

Tabel 4. Perbandingab Raw Score dan Logit Score Berdasarkan 63 Item yang Fit/Cocok dengan Model PCM Tiga Kategori

ASPEK/SUBASPEK	Ability			DIFFICULTY		
	Rata-rata	**Min**	**Maks**	**Rata-rata**	**Min**	**Maks**
A. Keterampilan Dasar	**-0.69**	**-0.83**	**0.62**	**0.01**	**-73**	**0.75**
1. Keterampilan mengamati	-0.71	-0.82	-0.6	-0.14	-0.67	0.49
2. Keterampilan merekam data/informasi	-0.74	-0.8	-0.68	0.06	-0.46	0.46
3. Keterampilan mengikuti instruksi	-0.72	-0.76	-0.62	-0.09	-0.28	0.09
4. Keterampilan mengklasifikasi	-0.70	-0.71	-0.69	-0.08	-0.51	0.36
5. Keterampilan mengukur	-0.71	-0.83	-0.62	-0.14	-0.73	0.12
6. Keterampilan memanipulasi gerakan	-0.64	-0.7	-0.57	0.43	0.22	0.75
7. Keterampilan mengimplemetasikan prosedur/teknik/penggunaan peralatan	-0.58	-0.77	0.62	0.00	-0.25	0.27
II. Keterampilan mengolah/memroses (process skills)	**-0.69**	**-0.85**	**-0.59**	**0.01**	**-0.41**	**0.39**
1. Keterampilan menginferensi	-0.7	-0.85	-0.62	0.07	-0.29	0.39
2. Keterampilan membuat prediksi	-0.71	-0.78	-0.65	0.02	-0.36	0.38
3. Keterampilan menyeleksi prosedur	-0.66	-0.7	-0.59	-0.07	-0.41	0.15

Tabel 4 menujukkan bahwa baik dalam hal aspek keterampilan dasar maupun subaspeknya maupun dalam hal aspek keterampilan memroses maupun subspeknya, kemampuan testi di bawah tingkat kesulitan item. Dengan demikian secara keseluruhan pada umumnya kreativitas KPS sukar bagi peserta didik.

Skor rata-rata dan simpangan baku kreativitas KPS aspek kehidupan pada peserta didik kelas IV dan V pada mata pelajaran IPA SD di 10 UPTD di DIY hasilnya disajikan pada Tabel 5.

Tabel 5. Skor Rata-rata dan Simpangan Baku Kreativitas KPSAK Kelas IV Mapel IPA SD di 10 UPTD di DIY beserta Macam Perangkat Tes yang Diujikan

Jenjang kelas SD	N	SKOR MENTAH				SKOR MAKSIMUM		SKOR ESTIMASI			
		MIN	MAKS	Ȳ	S	MENTAH	ESTIMASI	MIN	MAKS	Ȳ	S
IV	1548	0	84	35.31	16.68	384	>3.20	<-1.95	-0.34	-0.66	0.21
V	1512	0	84	41.49	15.01	384	>3.20	<-1.95	-0.34	-0.59	0.14

Keterangan: 1) Peserta didik IV yang memperoleh skor 0 sebanyak 11 anak, yang kelas V sebanyak 2 anak
2) Estimasi skor logit terhadap skor mentah 1 sebesar -1,95 dan terhadap skor mentah maksimum 383 sebesar +3.20 sehingga untuk 0 sebesar <-1.95 dan untuk 384 sebesar >+3.20

Tabel 5 menunjukkan bahwa rata-rata skor mentah dan skor skala logit kreativitas KPS kelas IV dibawah kelas V. Melihat besarnya skor rata-rata, menunjukkan hasil yang masih rendah dibandingkan skor maksimumnya.

Capaian skor mentah dan skor skala logit testi sampel di 10 UPT/UPTD di Provinsi DIY disajikan pada Tabel 6. Tabel 6 menunjukkan bahwa hanya di UPT Yogya Timur yang memberikan informasi bahwa skor rata-rata kreativitas KPS yang diperoleh peserta didik kelas IV sedikit lebih tinggi daripada yang diperoleh peserta didik kelas V. Pada 9 UPT/UPTD lainnya skor rata-rata kreativitas KPS yang dicapai peserta didik kelas IV lebih rendah dibandingkan kelas V.

Meskipun hasilnya rendah, dan masih ada testi yang memperoleh skor 0 menunjukkan bahwa masih ada anak yang belum mampu berkreasi, namun ada peningkatan kemampuan kreatifitas KPS aspek kehidupan antara kelas IV dan kelas V. Kelas IV yang memperoleh skor 0 sebanyak 11 anak sementara kelas V hanya 2 anak. Skor mentah rata-rata kelas IV 35.32 dan kelas 41.49 dan jika dalam skor logit kelas IV hanya -0.66 sementara kelas V -0.59. Seberapa jauh guru sudah mengajarkan kreativitas pada peserta didik tidak diteliti dalam penelitian ini.

Tabel 6. Skor Rata-rata dan Simpangan Baku Kreativitas KPS Aspek Kehidupan pada Mata Pelajaran IPA Berdasarkan Macam UPTD dan Jenjang Kelas di Provinsi DIY

UPTD	KELAS	N	SKOR MENTAH				SKOR MAKSIMUM	SKOR ESTIMASI			
			MIN	MAKS	Ȳ	S		MIN	MAKS	Ȳ	S
Pengasih	IV	110	3	74	34.59	16.17	384	-1.45	-0.38	-0.67	0.20
	V	102	11	82	39.83	14.80	384	-0.98	-0.35	-0.60	0.12
Kalibawang	IV	120	3	60	32.03	12.50	384	-1.45	-0.45	-0.68	0.16
	V	109	5	70	38.54	13.00	384	-1.26	-0.40	-0.61	0.13
Bantul	IV	150	3	75	36.13	16.08	384	-1.45	-0.38	-0.65	0.18
	V	147	5	75	42.90	14.69	384	-1.26	-0.38	-0.58	0.14
Piyungan	IV	184	0	71	31.16	15.81	384	<-1.95	-0.4	-0.71	0.24
	V	195	0	83	39.36	17.71	384	<-1.95	-0.35	-0.61	0.16
Wonosari	IV	157	0	73	35.11	18.95	384	<-1.95	-0.39	-0.69	0.29
	V	136	8	72	44.10	14.71	384	-1.09	-0.39	-0.57	0.12
Panggang	IV	137	0	68	36.71	12.62	384	<-1.95	-0.41	-0.62	0.11
	V	134	7	64	37.07	14.03	384	-1.13	-0.43	-0.63	0.14
Sleman	IV	179	0	74	28.30	15.04	384	<-1.95	-0.38	-0.74	0.21
	V	167	7	78	41.74	15.04	384	-1.13	-0.37	-0.59	0.13
Kalasan	IV	187	1	75	37.40	17.80	384	-1.95	-0.38	-0.66	0.23
	V	180	5	79	43.25	14.76	384	-1.26	-0.36	-0.58	0.13
Yogya Barat	IV	162	0	84	39.60	18.51	384	<-1.95	-0.34	-0.63	0.21
	V	172	4	84	45.59	15.73	384	-1.34	-0.34	-0.56	0.14
Yogya Timur	IV	162	7	78	42.26	16.09	384	-1.13	-0.37	-0.58	0.13
	V	170	6	71	40.59	11.99	384	-1.19	-0.40	-0.60	0.12

Berdasarkan hasil penelitian tahun pertama para guru sebagian besar menyatakan sudah membelajarkan kreativitas dengan cara disertai contoh. Sementara, secara teoretik bahwa idealnya pembelajaran untuk mengembangkan kreativitas setidaknya menggunakan model pembelajaran terapan (*applied learning*) dan pembelajaran ideasional (*ideational learning*) (Dettmer, 2006: 70-78).

Kemungkina lain bahwa pemahaman konsep juga menjadi target guru dalam mengajar, hal ini sejalan dengan pendapat Burke (2007: 58-63) tentang pentingnya mempertimbangkan kemungkinan untuk menyeimbangkan pembelajaran berbasis standar dan pembelajaran untuk mengembangkan kreativitas. Pada dasarnya antara pembelajaran berbasis standar dan pembelajaran untuk mengembangkan kreativitas merupakan dua spektrum yang sifatnya berkebalikan. Pemikiran kreatif dengan jelas terpisah dari pemikiran sekuensial sementara kemampuan berpikir analitis berasosiasi dengan standar dan pendidikan tradisional. Seandainya salah satu komponen pelajaran tersebut diikuti maka keseimbangan di dalam gaya berpikir dapat

terpengaruh. Penetapan bagaimana caranya mengintegrasikan kreativitas ke dalam suatu sistem yang berbasis standar sangat penting untuk mempertimbangkan kebutuhan pembelajaran bagi peserta didik berbakat.

Pembelajaran IPA yang kreatif idealnya bahwa peserta didik diminta untuk melakukan penemuan atau inkuiri secara terbuka, atau mengerjakan tugas-tugas yang berkait dengan penyelidikan sehingga peserta didik melakukan kegiatan seperti kegiatan kreatif yang dilakukan oleh ilmuwan dalam melakukan riset ilmiah. Pendekatan kognitif menyatakan bahwa pembelajaran dapat menyesuaikan diri dengan mengembangkan pola penalaran yang kreatif. Peserta didik IPA di sekolah adalah 'pemikir sederhana', oleh karenanya cenderung boleh untuk menggunakan proses ilmiah manapun dengan cara yang berbeda dari para ilmuwan (Kind & Kind, 2007: 1-37) namun penerapannya di SD tidaklah mudah karena pada SD dengan peserta didik yang mayoritas kurang potensial boleh jadi guru lebih konsentrasi untuk peserta didik dapat memahami konsep, yang otomatis mengembangkan kemampuan berpikir konvergen. Guru tentukan akan jarang memberikan pertanyaan dengan jawaban yang divergen. Croom & Stair (2005: 12-14) menyatakan bahwa pertanyaan yang bersifat divergen adalah pertanyaan yang tidak akan memberikan jawaban ya atau tidak. Pertanyaan yang diawali dengan kata seperti: “mengapa”, “bagaimana”, “apa yang anda pikirkan”, dan lainnya yang sejenis akan memberikan banyak kemungkinan jawaban. Dengan demikian, peserta didik akan menjawab pertanyaan-pertanyaan tersebut dengan banyak kemungkinan jawaban yang benar sebagai ciri berpikir divergen. Namun, masih banyak anak SD yang masih lebih mudah untuk berpikir konvergen sesuai dengan perkembangan mental mereka yang masih berada pada fase konkrit.

Kekhawatiran guru untuk tidak mengajarkan kreativitas pada peserta didik dengan potensi akademik yang rendah sebenarnya tidak perlu dijadikan alasan. Padahal tidak selalu anak cerdas pasti kreatif. Hasil penelitian Ferrando et al. (2005: 21-50) menunjukkan adanya korelasi yang rendah antara kreativitas dan intelegensi. Peserta didik dengan IQ yang tinggi tidak semuanya lebih kreatif. Menurut Cromie (2007: 1) tidak semua studi menunjukkan adanya korelasi antara tingkatan IQ dan kreativitas. Beberapa studi menunjukkan bahwa peningkatan kreativitas sejalan dengan peningkatan IQ sampai dengan IQ setinggi 120. Kyung Hee Kim (2005: 1) melaporkan bahwa hasil metaanalisis 447 koefisien korelasi menunjukkan banyak skor tes kravitas yang tidak ada hubungannya dengan skor IQ, namun banyak pula yang menunjukkan hubungannya. Artikel yang ditulis oleh Rawat, et.al. (2012: 264-275) juga

membantah bahwa pengembangan kreativitas berhubungan erat kepada pengembangan keterampilan untuk membentuk pertimbangan yang sesuai di dalam situasi yang berbeda. Oleh karena itu, pengembangan kreativitas harus dibelajarkan seawal mungkin kepada peserta didik.

PENUTUP

Dari temuan di lapangan dapat disimpulkan bahwa, instrumen pengukur kreativitas KPS aspek kehidupan yang dikembangkan dan diujicobakan pada 2030 testi pada 10 UPT/UPTD di Provinsi DIY menunjukkan seluruh item *fit* dengan model *PCM*. Menilik skor kemampuan rata-rata peserta yang masih di bawah tingkat kesulitan item. Rekomendasi yang diberikan adalah diperlukan upaya untuk meningkatkan kemampuan guru dalam membelajarkan kreativitas KPS aspek kehidupan kepada peserta didik.

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MEASUREMENT OF CREATIVITY OF SCIENCE PROCESSING SKILLS ON LIFE ASPECTS IN NATURAL SCIENCES SUBJECT AT ELEMENTARY SCHOOL

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ABSTRACT: This study aims to develop creativity test on natural Science Process Skills (SPS) on life aspects in elementary school natural science using items that fit with the Partial Credit Model (PCM) also to determine mastery of SPS testee creativity. This research is the continuation of the Phase I study which was initiated by developing SPS learning continuum, arrange items, expert study, testing on 637 V grade and VI grade testee using divergent models scoring. The result is only one out of 63 which is less to follow MNSQ Infit limit, but fit to take *t* Infit limit. Raw score is of 3 to 82, the average score is 49.89 of the maximum 126. In this research, test devices are seperated into four. Each test device is equipped with anchor item, each student is only working on one test device consisting of 20 items with two correct answers. Scoring is using creative scoring pattern, one correct answer ≤20% was given a score of 3, >20%-40% were given a score of 2, and > 40% were given a score of 1. All items fit with the model, but there is only one item that is up to a score of 4 and 1 items is only up to a score of 2 out of a maximum score of 6 for each item. Logit scale of the difficulty level of the items is 0.0 ± 0.28 at average while the ability of the testee only reached an average of -0.63 ± 0.18. In this research also was developed the manual to developing instrument to measure the reatifity of SPS. This manual has been tried-out to the teachers and supervisors. The average score of the teacher's comprehension are 71.7 and the supervisor's comprehension are 68.8.

(Key word: creativity, science process skills, partial credit model)

INTRODUCTION

A. Background

The nature of studying Natural Sciences (IPA) is to train learners to be able to perform new investigations on natural phenomena to discover new scientific products through a scientific process based on scientific attitude. The new scientific products may be facts, concepts, generalisation, principles, theories and laws. Investigative process involves a variety science process skills such as observing, collecting the data, measuring, organizing data, clasifying, formulating hypotheses, predicting, conducting experiment, analyzing the data, inferencing, making models, and communicate scientifically (Carin & Sund, 1989: 6). Scientific processes

arranged in a specific order and used to solve a problem is called scientific method (Towle, 1989: 16-31).

Chiapetta (1997: 22) states that learners should be directed to actively inquiring in science learning. It involves a variety of strategies and techniques to help learners think and obtain something through various questions, gaps, process skills, deductive and inductive activities, information search, and problem solving. Inquiry learning will train learners to be able to conduct investigations (Edwards, 1997: 18).

Attachment of Regulation of the Minister of National Education (Permendiknas) Number 22 of 2006 on the Content Standards for Primary and Secondary Education (2006: 484) stated that science deals with how to find out nature systematically, so that the it is not only a mastery of the body of knowledge in the form of facts, concepts, or principles, but also a process of discovery or inquiry. Science learning should be conducted by scientific inquiry approach to cultivate the ability to think, create, work, and act as in scientific way and communicate it as important aspects of life skills.

In Appendix of the Minister of Education and Culture No. 64 of 2013 on the Content Standards for Primary and Secondary Education curriculum 2013(2013: 65-66), it is stated that Content Standards is adjusted to the substance of the national education goals in the domain of the spiritual attitudes and social attitudes, knowledge, and skills. Therefore, the Content Standard is developed to determine the criteria of scope and level of competence in accordance with the competencies of graduates which is formulated in the Graduate Competency Standards, which involves the attitudes, knowledge, and skills. All three competencies have are different in the process of derivation. Attitudes formed through activities: receiving, running, respecting, appreciating, and practicing. Knowledge gained through activities like knowing, understanding, applying, analyzing, evaluating, and creating.

In spite the Bloom taxonomy according to Anderson and Krathwohl (2001) which stated that to invent or create is placed as the highest cognitive abilities, it does not mean that creativity can not be taught to students in elementary school. It is supported by Miller (2005: 65) who defines creative simply as something that is not the result of duplication/imitation. Michalko (2000: 18-21) also states that creative thinking can be manifested in the ability to (a) do substitution / replacement, (b) combine, (c) adjust to other situations, (d) modify, enlarge, or add, (e) use something for other purposes, (f) eliminate or reduce, and (g) rearrange or distort.

The results of measurement on science process skills creativity (SPS) in high school conducted in 2010 at the High School Biology Course in 2010 by Bambang Subali as an independent research. The study was conducted in DIY and Central Java. The result shows that graded increase creativity of class X, class XI Natural Science, and class XII Natural Science is empirically proven. Yet their ability is relatively low. The results of this research have been published in Journal of Cakrawala Pendidikna Year XXX, No. 1, February 2011 with the title of "Creativity Measurement Science Process Skills in Context of Assessment For Learning. The mastery of SPS creativity in elementary school, especially regarding aspects of life in natural science subjects needs to be analyzed. Year I research shows that in general teachers have taught creative science process skills (SPS) and accompanied by the provision of examples. How Good the mastery of SPS creativity is became the main concern of this study. In this case the standardization of the instrument that has been initiated in the first phase is further standardized in the second phase.

B. Purpose of the Study

The purpose of this Phase II competence grant research is to develop SPS creativity tests of life aspect in elementary school natural science subjects by further standardization of its measurement intruments as well as develop measurement guidance. However, this article focused on the development of instruments and their measurement results. Development of the items is empirically tested for their suitability (fit) with a model of Partial Credit Model (PCM).

LITERATURE REVIEW

Human ability in Bloom's taxonomy is divided into three domains, i.e. (a) cognitive, (b) affective, and (c) psychomotor. Dettmer (2006: 71-73) formulated Bloom's taxonomy into four domains, i.e. (a) cognitive, (b) affective, (c) sensorimotor (substitute psychomotor), and (d) social. The four domains as actualization in learning form a unity. The ability to be creative is part of the cognitive aspects in addition to the level of knowing, understanding, applying, analyzing, evaluating, synthesizing, and imagining.

Creative learning in natural science can be taught through scientific inquiry in order to foster scientific thinking skills, including the ability to think of inventions during applying

scientific process skills. In the context of the development of students' creativity, Cochran & Lytle (2006: 668-693) expressed the need to create a conducive environment that truly supports learning activities means creating alternatives that suit the needs of the students during learning. Students are driven to a condition in which they likely find themselves and try to answer their own questions, not just answer question by memorizing without comprehending, and enable learners to be active with their own ideas.

Learning to write history can to improve creative and critical thinking skills (Richert, 2002: 57). It is true for natural science as well because the ability to think creatively and critically in natural science learning can also be developed by writing their experience and imagination concerning all natural phenomena even to in narrativing the background.

In order to find creative solutions, it is necessary to generate new ideas which is then expanded into concrete work to solve the problem (Sheppard et al, 2006: xvi). In order to solve problems creatively, some basic principles required are (1) that innovation requires a focus, without focus, creative ideas will never get to make a meaningful solution, (2) using "fuzzy logic" in form of imperfect or uncertain idea to move forward and make decisions, (3) develop gradually a solution to overcome the problems by always utilizing the ability and commitment in everytime, (4) position themselves as learners who want to learn and always look for new knowledge other than the commonly known. In orderto do it all, creativity should be developed in stages starting from thinking out of box (Sheppard et al, 2006: 10).

Creative problem solving process begins with the phase of increased anticipation, then reconcile or compare and dig expectations desired and undesired. The second phase is characterized by the presence of the diagnostic process in the brain in facing difficulty, in integrating various information available, re-check the information, elaborate, and in sorting information. Thus, the process of convergent and divergent occurs. The final phase is characterized by the ability to go beyond the existing barriers (Torrance, 1979: 241-246).

Different learning outcomes are actually expected, and the encouragement is given to each learner in order to achieve it. Ideational learning as recommended by Dettmer (2006: 73) which is essentially based on the idea of each student should be able to be initiated in all schools because it is not always that creative child is a smart one.

METHOD OF THE STUDY

The study was conducted by continuing the first phase. It starts in the stage of development procedure initiated by developing SPS learning continuum, arranging items, expert study, tests on 637 Class V and V testee using divergent scoring models.

Instrument of Creativity science process skills (SPS) test prepared containing aspects of basic skills and processing skills. The formulation of the SPS aspect refers to the formulation of SPS learning continuum postulated by Bambang Subali in 2009. Learning continuum skills formulation defined Bambang Subali in 2009 refers to several sources namely Rezba et.al. (2007), Bryce et.al. (1990), and Cox (1956). The followings are aspects and sub aspects of SPS measured in terms of creativity in relation to aspects of life in Elementary School natural science.

ASPECT/SUB ASPECT OF NATURAL SCIENCE PROCESS SKILLS CREATIVITY
I. Basic Skills
1. Observing Skills
1.1. Choose and match on their own living objects and the picture
1.2. Choose/determine living objects to observe its body parts change according to its color, form, and stages
1.3. Identify/recognize risky situation when perform observation at school which is the same with the situation at home
1.4. Choose symptoms to compare if two living objects are presented to identify their differences in detail
1.5. Match picture of a living objects with the real one or vice versa in order to perceive its various form
1.6. Identify/recognize the impact of technology upon nature in a certain area, or in a photograph (test device anchor 4)
1.7. Choose/identify/recognize name/genus of the animal based on the sound heard
2. Data information recording skills
2.1. Serve data in form of table complete with the label
2.2. Make summary of a paragraph/chapter/book which discusses symptom of live in living organism
2.3 Make chart or diagram of symptom of live in living organism correctly along with the label
2.4. Determine body or parts of body to draw accurately
2.5. Make histogram symptom of live in living organism along with the label
2.6. Make note to provide information about the result of observation on living organism and put the tittle
2.7. Complete a chart or diagram, graph or histogram about phenomena of living organisms
2.8. Make diagram/chart, graph or histogram about the life of living organism
2.9. Deliver information about the nature of living organism presented in form of diagram/chart, graph or histogram

On the basis of SPS aspects formulation, guides of creativity test that have been reviewed by two education experts of Biology from UNY and supervisor practitioners of Primary Schools are then arranged.

In phase I, 63 items packed in the three tests devices have been arranged and tested to each testee. The item is in form of description and intended to measure the SPS creativity related to activities of life. PPP creativity abilities measured are only aspects of basic skills and processing skills. Aspects of basic skills include (a) observing, (b) recording data / information, (c) following instructions, (d) classifying, (e) measuring, (f) manipulating motion, and (g) implement procedures or how to use the equipments. Aspects of processing skills include (a) inferencing, (b) predicting, and (c) selecting procedure. In the first test, creative is if the testee is able to give divergent answers on the items tested.

Samples of testee on the phase I study was 637. Such amount is acceptable since ideally a minimum testee for the pilot test is 500 in order that a test device can be used operationally (Muraki & Bock, 1998: 35). The result was one of the 63 items was not fit to MNSQ Infit limit, but fit to *t Infit* limit. Raw score was of 3 to 82, the average score was 49.89 from the maximum of 126.

In this study, which is phase II, items was divided into 4 test devices. Each device is equipped with an anchor item, and each student only works on one test device. Each test device consists of 20 items with two correct answers.

Scoring for creative refers to Diakidoy & Constantinou models (Kind & Kind, 2007). Scaling used by Diakidoy & Constantinou is scaling models which is used for measuring divergent process of creativity ability of Guilford. In this study, scoring for creative is done by giving a score of 3 for one correct answer ≤20%, > 20% -40% were given a score of 2, and > 40% were given a score of 1. All items were then tested to know its fitness to the Partial Credit Model. Since each item has 2 correct answers, the maximum score is 6 so that the analysis of the item using 7 categories politomus scale.

The testee came from 10 Technical Implementation Unit/ Technical Implementation Section Unit (UPT/UPTD) in 5 districts/cities Yogyakarta rovince. 2 UPT / UPTD of each district/city are selected purposively, one UPT / UPTD located in the central government and one Unit / UPTD located far from the central government except UPT of Yogyakarta both of which are located in the city of Yogyakarta. Each UPT/UPTD consists of 2 private Primary schools and

4 public Primary schools. Participants are students of class IV and class V. Test is conducted in June ahead of new academic year.

Data were analyzed using using the Quest program (Adam & Kho, 1996) with politomus scaling of seven categories. Fit items testing toward Partial Credit Model is based on the value of Infit Mean Square (Infit MNSQ) in the range of 0.77 to 1, 30 (Wright & Masters, 1982). Since all of the correct answer for each item is independent from one another, it is unconditional so that the chance of the correct answer is 0.5. The results of the analysis is presented in the form of the level of item difficulty and the lowest to the highest threshold value for each appearance increases the levels of difficulty. The analysis also presents the testee's average ability (mean ability) as well as the ability of for each step thresholds along the step threshold value. Step treshold presented is ranging from 0 to 1, 1 to 2 and so on until 5 to 6 as the highest score.

RESULT OF STUDY

After the fourth test device was tested on students of grade IV and V in 10 UPT / UPTD with 6 schools of each Unit / UPTD, the total of testee is 3060 (783 testee in test I, 764 testee in test II, 753 in test III, and 760 in test IV). Data were analyzed using the Quest Program simultaneously and separately. The results are as follows.

Table 1a. Summary of Item Estimates

Aspect	*Composite*	*Test I*	*Test II*	*Test III*	*Test IV*
N	*3060*	*783*	*764*	*753*	*760*
L	*65*	*20*	*20*	*20*	*20*
Mean	*0.03*	*0.08*	*0.01*	*0.02*	*0.02*
SD	*0.23*	*0.40*	*0.21*	*0.31*	*0.28*
SD (adjusted)	*0.22*	*0.39*	*0.18*	*0.30*	*0.27*
Reliability of estimate	*0.89*	*0.93*	*0.73*	*0.93*	*0.90*

Tabel 1b. Fit Statistics

Aspect	*Mean Square (MSQ)*									
	Composite		*Test I*		*Test II*		*Test III*		*Test IV*	
	Infit	*Outfit*	*Infit*	*Outfit*	*Infit*	*Outfit*	*Infit*	*Outfit*	*Infit*	*Outfit*
Mean	*1.00*	*0.99*	*1.02*	*1.06*	*1.00*	*0.99*	*1.00*	*1.03*	*1.00*	*1.00*
SD	*.04*	*0.18*	*0.10*	*0.21*	*0.08*	*0.14*	*0.10*	*0.17*	*0.09*	*0.13*
	T									
Mean	*0.01*	*-0.22*	*0.05*	*0.28*	*0.05*	*-0.02*	*-0.01*	*0.12*	*-0.08*	*0.05*
SD	*1.43*	*2.52*	*1.68*	*1.64*	*1.64*	*1.29*	*2.47*	*1.98*	*2.11*	*1.85*
Items with zero scores	*0*		*0*		*0*		*0*		*0*	
items with perfect scores	*0*		*0*		*0*		*0*		*0*	

Table 1a shows that the value of estimation reliability to item estimation, which is sample reliability for the combined test of 0.89 indicates that almost all samples tested fit to the rest of the items tested. Similarly, when the exam results are analyzed for each test device, only the second test that shows low grade which still achieved 0.73. However, no items get the score of 0, meaning that none of the items that can not be done at all by the testee. Fit testing of the reliability of the sample as presented in Table 1b shows that almost all of the items fit the model because the value of Infit Mean Square (InfitMNSQ) is 1.00 but deviation standard (SD) 0.04 comply with the criteria that should be of 1.0 for InfitMNSQ and SD of 0.0 (Wright & Masters, 1982: 108-109). Similarly, when analyzed separately, all of the price MNSQ Infit is close to 1:00 and deviation of around 0:10.

The result of case estimation is served on Table 2a and 2b.

Table 2a. ***Summary of Case Estimates***

Aspect	*Composite*	*Test I*	*Test II*	*Test III*	*Test IV*
N	*3060*	*783*	*764*	*753*	*760*
L	*65*	*20*	*20*	*20*	*20*
Mean	*-0.63*	*-0.14*	*-0.48*	*-0.36*	*-0.27*
SD	*0.18*	*0.27*	*0.33*	*0.25*	*0.29*
SD (adjusted)	*0.14*	*0.23*	*0.28*	*0.22*	*0.26*
Reliability of estimate	*0.62*	*0.74*	*0.73*	*0.72*	*0.78*

Table 2b. ***Fit Statistics***

Aspect	*Mean Square (MSQ)*									
	Composite		*Test I*		*Test II*		*Test III*		*Test IV*	
	Infit	*Outfit*	*Infit*	*Outfit*	*Infit*	*Outfit*	*Infit*	*Outfit*	*Infit*	*Outfit*
Mean	*1.01*	*0.99*	*1.01*	*1.06*	*1.02*	*0.99*	*1.02*	*1.03*	*1.02*	*1.00*
SD	*0.19*	*0.40*	*0.36*	*0.77*	*0.29*	*0.40*	*0.29*	*0.55*	*0.28*	*0.35*
	T									
Mean	*0.11*	*0.11*	*0.02*	*0.18*	*0.08*	*0.14*	*0.05*	*0.12*	*0.05*	*0.08*
SD	*0.53*	*0.63*	*1.04*	*0.77*	*0.86*	*0.64*	*0.99*	*0.72*	*0.96*	*0.70*
Cases with zero scores	*13*		*3*		*5*		*0*		*7*	
Cases with perfect scores	*0*		*0*		*0*		*0*		*0*	

Table 2a shows that the value of estimation reliability for person estimation (case estimate), which is test reliability, showed the number of 0.62. It indicates that if there is test repetition, the result will be stable. When split into four test devices, reliability of measurement error is above 0.7 for all. The test of fitness to the test reliability presented in Table 2b shows that the value of test reliability which is based on the error of measurement with InfitMNSQ value of 1.01 and deviation standard (SD) 0:19 is approaching the due standard, that is InfitMNSQ of 1.0 and SD of 0.0 (Wright & Masters, 1982: 115-117). The value of tests reliability using classical test, the reslut of classic test using the Quest program shows 0.51 internal consistency. Therefore, it is still in the average category because it is above the limit of the general provisions of 0.3.

Testee average ability, the level of difficulty of each item, and the step threshold of each item, also the testing of fit item with PCM model using seven categories politomus scaling are presented in Table 3. Table 3 shows that all of the 65 items are fit or accordance with the PCM model of seven categories it it is based on the value MNSQ Infit as it is required by Adam & Kho (1996). However, there are two items that do not have step threshold up to 6, which is item number "2.3 Make your own chart / diagram of a symptom of living organism complete with label" were only up to the step threshold 2. It means that if the testee give 1 correct answer and is given by >20-40% testee or there are 2 answers and both are given by> 40% testee. Item number "2.1. Presents data in the form of tables complete with the label "also only up to the step threshold. Meaning that testee certainly give two correct answers with a combination score of 3+1 (first answer was given by ≤20% and the second answer was given by >40% testee) or score combination of 2+2 (either the first or second answer was given by> 20-40% testee).

Table 3. Testee average ability, item difficulty, and step threshold of each item, and the item fit test with the PCM model of seven categories politomus scaling

Item Number	Difficulty	Aspect		Step						Infit MNSQ	RESULT
				1	2	3	4	5	6		
II. Basic Skill											
1. Observation Skill											
1.1	0.49	Mean Ability	-0.6	-0.52	NA	-0.54	-0.49	NA	-0.51	`.97	*Fit*
		Thresholds		-0.04	-0.02	-0.02	0.13	0.24	0.24		
1.2	-0.33	Mean Ability	-0.82	NA	-0.72	-0.68	NA	-0.6	-0.6	1.13	*Fit*
		Thresholds		-0.24	-0.24	-0.21	-0.11	-0.11	0.09		
1.3	-0.18	Mean Ability	-0.73	NA	NA	-0.59	NA	NA	-0.52	0.99	*Fit*
		Thresholds		-0.24	-0.24	-0.24	-0.11	-0.11	-0.11		
1.4	-0.02	Mean Ability	-0.76	-0.7	NA	-0.63	-0.6	NA	-0.57	1.06	*Fit*
		Thresholds		-0.27	-0.22	-0.22	-0.16	0.3	0.3		
1.5	0.09	Mean Ability	-0.65	NA	NA	-0.56	NA	NA	-0.5	0.98	*Fit*
		Thresholds		-0.03	-0.03	-0.03	0.2	0.2	0.2		
1.6	-0.67	Mean Ability	-0.67	NA	-0.58	-0.58	NA	-0.53	-0.54	0.99	*Fit*
(anchor)		Thresholds		-0.52	-0.52	-0.49	-0.12	-0.12	0.08		
1.7	-0.33	Mean Ability	-0.75	NA	-0.56	-0.59	NA	NA	-0.56	1.07	*Fit*
		Thresholds		-0.41	-0.41	-0.4	-0.39	-0.39	-0.39		
2. Skill to Presume Data/Information											
2.1.	0.32	Mean Ability	-0.8	-0.74	-0.64	-0.6	-0.59	NA	NA	1.04	*Fit*
		Thresholds		0.07	0.12	0.54	0.57				
2.2.	-0.05	Mean Ability	-0.72	NA	NA	-0.57	NA	NA	-0.53	1	*Fit*
		Thresholds		-0.14	-0.14	-0.14	0.04	0.04	0.04		
2.3	0.24	Mean Ability	-0.74	-0.61	-0.55	NA	NA	NA	NA	0.98	*Fit*
		Thresholds		0.19	0.28						
2.4	-0.02	Mean Ability	-0.77	NA	NA	-0.62	NA	NA	-0.56	1.04	*Fit*
		Thresholds		-0.1	-0.1	-0.1	0.06	0.06	0.06		
2.5	0	Mean Ability	-0.74	NA	-0.6	-0.58	NA	-0.58	-0.53	1.07	*Fit*
		Thresholds		-0.23	-0.23	-0.22	-0.17	-0.17	1.17		
2.6	-0.08	Mean Ability	-0.7	NA	NA	-0.56	NA	NA	-0.49	0.97	*Fit*
		Thresholds		-0.16	-0.16	-0.16	0	0	0		
2.7	-0.46	Mean Ability	-0.71	NA	-0.6	-0.59	NA	NA	-0.56	1.05	*Fit*
		Thresholds		-0.38	-0.38	-0.38	-0.37	-0.37	-0.37		
2.8	0.46	Mean Ability	-0.77	-0.69	-0.63	-0.61	-0.54	-0.58	-0.55	1.03	*Fit*
		Thresholds		0.09	0.16	0.19	0.62	0.77	0.89		
2.9	0.09	Mean Ability	-0.68	NA	NA	-0.56	NA	NA	-0.54	1	*Fit*
		Thresholds		-0.02	-0.02	-0.02	0.19	0.19	0.19		
3. Skill to Folow Instruction											
3.1	-0.28	Mean Ability	-0.75	NA	-0.61	-0.6	NA	-0.51	-0.51	0.98	*Fit*
		Thresholds		-0.24	-0.24	-0.19	-0.08	-0.08	0.12		
3.2	-0.06	Mean Ability	-0.62	NA	NA	-0.54	NA	NA	-0.49	0.96	*Fit*
		Thresholds		-0.17	-0.17	-0.17	0.05	0.05	0.05		
3.3	0.09	Mean Ability	-0.76	NA	NA	-0.6	NA	NA	-0.53	1.02	*Fit*
		Thresholds		-0.02	-0.02	-0.02	0.2	0.2	0.2		
3.4	-0.11	Mean Ability	-0.76	NA	NA	-0.59	NA	NA	-0.53	1.01	*Fit*
		Thresholds		-0.21	-0.21	-0.21	-0.02	-0.02	-0.02		

Cont. Table 3. Testee average ability, item difficulty, and step threshold of each item, and the item fit test with the PCM model of seven categories politomus scaling

Item Number	Difficulty	Aspect		Step						Infit MNSQ	KET.
				1	2	3	4	5	6		
4. Classifying Skill											
4.1 (anchor)	-0.51	Mean Ability	-0.69	NA	-0.59	-0.56	NA	-0.53	-0.52	0.93	*Fit*
		Thresholds		-0.56	-0.56	-0.45	-0.09	-0.09	0.11		
4.2	0.36	Mean Ability	-0.71	NA	-0.58	-0.62	-0.52	-0.51	-0.44	0.96	*Fit*
		Thresholds		-0.13	-0.13	-0.05	-0.01	0.31	2.27		
5. Measuring Skill											
5.1 (anchor)	-0.43	Mean Ability	-0.72	-0.65	-0.63	-0.57	-0.56	-0.55	-0.5	0.87	*Fit*
		Thresholds		-0.72	-0.67	-0.57	-0.31	-0.23	-0.13		
5.2	-0.73	Mean Ability	-0.62	NA	-0.48	-0.53	NA	NA	-0.5	0.98	*Fit*
		Thresholds		-0.15	-0.15	-0.15	0.08	0.08	0.08		
5.3	-0.11	Mean Ability	-0.83	NA	NA	-0.64	NA	NA	-0.57	1.07	*Fit*
		Thresholds		-0.2	-0.2	-0.2	-0.03	-0.03	-0.03		
5.4	-0.01	Mean Ability	-0.7	NA	NA	-0.58	NA	NA	-0.51	1	*Fit*
		Thresholds		-0.11	-0.11	-0.11	0.09	0.09	0.09		
5.5	0.04	Mean Ability	-0.74	NA	-0.61	-0.58	-0.53	-0.5	-0.5	0.99	*Fit*
		Thresholds		-0.19	-0.19	-0.1	0.01	0.06	0.99		
5.6	-0.02	Mean Ability	-0.63	NA	NA	-0.52	NA	NA	-0.48	0.95	*Fit*
		Thresholds		-0.14	-0.14	-0.14	0.09	0.09	0.09		
5.7	0.12	Mean Ability	-0.74	NA	NA	-0.61	NA	NA	-0.56	1.02	*Fit*
		Thresholds		0.02	0.02	0.02	0.22	0.22	0.22		
5.8	0.05	Mean Ability	-0.72	NA	NA	-0.57	NA	NA	-0.51	1	*Fit*
		Thresholds		-0.09	-0.09	-0.09	0.19	0.19	0.19		
6. Movement Manipulation Skill											
6.1	0.49	Mean Ability	-0.7	NA	NA	-0.55	NA	NA	-0.5	1	*Fit*
		Thresholds		0.46	0.46	0.46	0.52	0.52	0.52		
6.2	0.24	Mean Ability	-0.62	NA	NA	-0.52	NA	NA	-0.44	0.98	*Fit*
		Thresholds		0.21	0.21	0.21	0.26	0.26	0.26		
6.2	0.75	Mean Ability	-0.57	NA	NA	-0.48	NA	NA	-0.51	0.99	*Fit*
		Thresholds		0.65	0.65	0.65	0.86	0.86	0.86		
6.4	0.22	Mean Ability	-0.66	NA	NA	-0.55	NA	NA	-0.49	0.99	*Fit*
		Thresholds		0.13	0.13	0.13	0.32	0.32	0.32		
7. Implementation on procedure/techniques/equipment utility Skill											
7.1	0.08	Mean Ability	-0.76	NA	NA	-0.61	NA	NA	-0.55	1.02	*Fit*
		Thresholds		-0.03	-0.03	-0.03	0.19	0.19	0.19		
7.2	0.27	Mean Ability	-0.64	NA	NA	-0.6	NA	NA	-0.47	1	*Fit*
		Thresholds		0.25	0.25	0.25	0.29	0.29	0.29		
7.3	-0.23	Mean Ability	-0.74	NA	NA	-0.6	NA	NA	-0.51	0.98	*Fit*
		Thresholds		-0.27	-0.27	-0.27	-0.19	-0.19	-0.19		
7.4	0.2	Mean Ability	-0.64	-0.54	NA	-0.55	-0.5	NA	-0.51	0.97	*Fit*
		Thresholds		-0.13	-0.08	-0.08	0.01	0.27	0.27		
7.5	0.18	Mean Ability	-0.76	NA	-0.64	-0.62	NA	-0.6	-0.53	1.05	*Fit*
		Thresholds		-0.05	-0.05	0	0.12	0.12	0.98		

Cont. Table 3. Testee average ability, item difficulty, and step threshold of each item, and the item fit test with the PCM model of seven categories politomus scaling

Item Number	Difficulty	Aspect		Step						Infit MNSQ	KET.
				1	2	3	4	5	6		
7.6	-0.09	Mean Ability	-0.73	NA	NA	-0.59	NA	NA	-0.53	1.01	*fit*
		Thresholds		-0.18	-0.18	-0.18	0	0	0		
7.7	-0.11	Mean Ability	-0.72	NA	-0.56	-0.58	NA	-0.5	-0.51	0.97	*fit*
		Thresholds		-0.17	-0.17	-0.1	-0.02	-0.02	0.2		
7.8	-0.11	Mean Ability	0.62	NA	-0.55	-0.52	NA	-0.49	-0.46	0.96	*fit*
		Thresholds	-0.08	-0.08	-0.02	0.19	0.19	0.4	0.96	-0.7	
7.9	0.02	Mean Ability	-0.76	NA	NA	-0.62	NA	NA	-0.55	1.03	*fit*
		Thresholds		-0.07	-0.07	-0.07	0.11	0.11	0.11		
7.10	-0.06	Mean Ability	-0.69	NA	NA	-0.58	NA	NA	-0.53	1.01	*fit*
		Thresholds		-0.13	-0.13	-0.13	0	0	0		
7.11	-0.04	Mean Ability	-0.69	NA	NA	-0.53	NA	NA	-0.5	0.96	*fit*
		Thresholds		-0.13	-0.13	-0.13	0.04	0.04	0.04		
7.12	-0.25	Mean Ability	-0.66	NA	-0.55	-0.54	NA	-0.49	-0.48	0.95	*fit*
		Thresholds		-0.19	-0.19	-0.14	0.05	0.05	0.27		
7.13	0.2	Mean Ability	-0.77	NA	-0.62	-0.62	NA	-0.56	-0.57	1.03	*fit*
		Thresholds		0.03	0.03	0.18	0.32	0.32	0.56		
7.14	-0.09	Mean Ability	-0.73	NA	NA	-0.59	NA	NA	-0.56	1.03	*fit*
		Thresholds		-0.2	-0.2	-0.2	0	0	0		
II. Process Skill											
3. Inference Skill											
1.1	-0.2	Mean Ability	-0.62	NA	-0.57	-0.54	NA	-0.5	-0.49	0.97	*fit*
		Thresholds		-0.16	-0.16	-0.11	0.01	0.01	0.2		
1.2	0.09	Mean Ability	-0.67	-0.56	-0.54	-0.55	-0.51	NA	-0.55	0.97	*fit*
		Thresholds		-0.16	-0.08	-0.08	-0.01	0.6	0.6		
1.2a	0.14	Mean Ability	-0.85	-0.66	NA	-0.61	-0.59	NA	-0.61	1.04	*fit*
		Thresholds		-0.11	-0.03	-0.03	0.03	0.47	0.47		
1.3	-0.29	Mean Ability	-0.76	NA	NA	-0.64	NA	NA	-0.58	1.09	*fit*
		Thresholds		-0.31	-0.31	-0.31	-0.26	-0.26	-0.26		
1.3a	0.14	Mean Ability	-0.66	NA	-0.57	-0.59	NA	-0.53	-0.55	1	*fit*
		Thresholds		-0.07	-0.07	0.02	0.13	0.13	0.59		
1.4	0.36	Mean Ability	-0.66	-0.55	NA	-0.54	-0.51	NA	-0.5	0.97	*fit*
		Thresholds		-0.05	0.09	0.09	0.27	0.77	0.77		
1.5	0.06	Mean Ability	-0.73	NA	NA	-0.63	NA	NA	-0.56	1.03	*fit*
		Thresholds		0	0	0	0.12	0.12	0.12		
1.6	0.39	Mean Ability	-0.64	NA	NA	-0.59	NA	NA	-0.52	1	*fit*
		Thresholds		0.35	0.35	0.35	0.44	0.44	0.44		
1.7	-0.06	Mean Ability	-0.68	NA	NA	-0.58	NA	NA	-0.49	0.98	*fit*
		Thresholds		-0.16	-0.16	-0.16	0.03	0.03	0.03		
4. Predicting Skill											
2.1	0.08	Mean Ability	-0.69	-0.57	-0.6	-0.55	-0.53	-0.52	-0.5	0.97	*fit*
		Thresholds		-0.23	-0.19	-0.13	0.03	0.22	0.57		
2.2	-0.04	Mean Ability	-0.78	NA	NA	-0.66	NA	NA	-0.61	1.09	*fit*
		Thresholds		-0.16	-0.16	-0.16	0.08	0.08	0.08		
2.3	0.38	Mean Ability	-0.65	NA	NA	-0.58	NA	NA	-0.5	1	*fit*
		Thresholds		0.23	0.23	0.23	0.54	0.54	0.54		
2.4 (anchor)	-0.36	Mean Ability	-0.71	-0.63	-0.62	-0.63	-0.54	-0.57	-0.52	0.97	*fit*
		Thresholds		-0.98	-0.74	-0.54	-0.35	-0.18	0.56		

Cont. Table 3. Testee average ability, item difficulty, and step threshold of each item, and the item fit test with the PCM model of seven categories politomus scaling

Item Number	Difficulty	Aspect		Step						Infit MNSQ	KET.
				1	2	3	4	5	6		
3											
3.1	0.15	Mean Ability	-0.7	-0.67	-0.57	-0.61	-0.53	NA	-0.5	0.99	*fit*
		Thresholds		-0.13	-0.05	0.05	0.1	0.59	0.59		
3.2	-0.41	Mean Ability	-0.66	NA	NA	-0.6	NA	NA	-0.55	1.03	*fit*
		Thresholds		-0.49	-0.49	-0.49	-0.33	-0.33	-0.33		
3.3	0.08	Mean Ability	-0.59	NA	NA	-0.5	NA	NA	-0.47	0.97	*fit*
		Thresholds		0.03	0.03	0.03	0.12	0.12	0.12		
3.4	-0.1	Mean Ability	-0.68	NA	NA	-0.57	NA	NA	-0.52	0.99	*fit*
		Thresholds		-0.18	-0.18	-0.18	-0.02	-0.02	-0.02		

Comparison of testee mean ability and item difficulty is presented in Table 4.

Tabel 4. Comparison of Raw Score dan Logit Score based on 63 Items Fit to Three Categories PCM Model

ASPECT/SUB ASPECT	Ability			DIFFICULTY		
	Rata-rata	Min	Maks	Rata-rata	Min	Maks
A. Basic Skill	**-0.69**	**-0.83**	**0.62**	**0.01**	**-73**	**0.75**
1. Observing Skill	-0.71	-0.82	-0.6	-0.14	-0.67	0.49
2. Data Recording Skill	-0.74	-0.8	-0.68	0.06	-0.46	0.46
3. Instruction Engagement Skill	-0.72	-0.76	-0.62	-0.09	-0.28	0.09
4. Classifying Skill	-0.70	-0.71	-0.69	-0.08	-0.51	0.36
5. Measuring Skill	-0.71	-0.83	-0.62	-0.14	-0.73	0.12
6. Movement Manipulation Skill	-0.64	-0.7	-0.57	0.43	0.22	0.75
7. Implementing of procedure/techniques/equipment utilization Skill	-0.58	-0.77	0.62	0.00	-0.25	0.27
II. Process Skill	**-0.69**	**-0.85**	**-0.59**	**0.01**	**-0.41**	**0.39**
1. Inference Skill	-0.7	-0.85	-0.62	0.07	-0.29	0.39
2. Predicting Skill	-0.71	-0.78	-0.65	0.02	-0.36	0.38
3. Procedure Selection Skill	-0.66	-0.7	-0.59	-0.07	-0.41	0.15

Table 4 showed that the testee ability is below the items difficulty level for both in basic skills as well as its sub aspects and process skill as well as its sub aspects. It means that SPS creativity is generally difficult for learners.

The result of average score and standard deviation of SPS creativity in aspects of life of IV and V grade students in primary school natural science subject in 10 UPTD DIY is presented in Table 5.

Table 5. Average score and standard deviation of SPS creativity in aspects of life of IV grade primary school natural science subject in 10 UPTD DIY and Test Devices Applied

Grade	N	RAW SCORE				MAXIMUM SCORE		ESTIMATION SCORE			
		MIN	MAX	$\bar{Y}$	S	RAW	ESTIM	MIN	MAX	$\bar{Y}$	S
IV	1548	0	84	35.31	16.68	384	>3.20	<-1.95	-0.34	-0.66	0.21
V	1512	0	84	41.49	15.01	384	>3.20	<-1.95	-0.34	-0.59	0.14

Note: 1) IV grade students got the score 0 are 11, and V grade students with the same score are 2
2) Logit score estimation upon war score 1 is -1,95 and upon raw score maximum 383 is +3.20 so for 0 is <-1.95 and for 384 is >+3.20

Table 5 shows that the average raw scores and logit scores scale of IV grade SPS creativity is below V grade. Considering the average score, the result is still lower than the maximum score.

Raw scores and logit scale scores of testee in 10 UPT / UPTD in DIY is presented in Table 6. It shows that it is only in East Yogya UPT that the average scores of SPS creativity obtained by IV grade students are higher than V grade students. At the other 9 UPT/ UPTD, the average scores achieved by IV grade students are lower than V grade students.

Despite the low scores and there are still testee with score of 0 which indicates that there are students who have not been able to be creative, there is an increased in ability of SPS creativity in aspects of life among IV grade and V grade. IV grade who obtained 0 were 11 students while it is only 2 in V grade. The average raw score of IV grade is 35.32 and V grade is 41.49 and for logit score, IV grade got -0.66 and V grade got -0.59. How far the teachers have taught creativity to students is not examined in this study.

Tabel 6. Average Score and Standard Deviation of SPS Creativity Aspect of Life in Natural Science Based on Various UPTD and Grade in Yogyakarta

UPTD	GRADE	N	RAW SCORE				MAXIMUM SCORE	ESTIMATION SCORE			
			MIN	MAX	Ȳ	S		MIN	MAX	Ȳ	S
Pengasih	IV	110	3	74	34.59	16.17	384	-1.45	-0.38	-0.67	0.20
	V	102	11	82	39.83	14.80	384	-0.98	-0.35	-0.60	0.12
Kalibawang	IV	120	3	60	32.03	12.50	384	-1.45	-0.45	-0.68	0.16
	V	109	5	70	38.54	13.00	384	-1.26	-0.40	-0.61	0.13
Bantul	IV	150	3	75	36.13	16.08	384	-1.45	-0.38	-0.65	0.18
	V	147	5	75	42.90	14.69	384	-1.26	-0.38	-0.58	0.14
Piyungan	IV	184	0	71	31.16	15.81	384	<-1.95	-0.4	-0.71	0.24
	V	195	0	83	39.36	17.71	384	<-1.95	-0.35	-0.61	0.16
Wonosari	IV	157	0	73	35.11	18.95	384	<-1.95	-0.39	-0.69	0.29
	V	136	8	72	44.10	14.71	384	-1.09	-0.39	-0.57	0.12
Panggang	IV	137	0	68	36.71	12.62	384	<-1.95	-0.41	-0.62	0.11
	V	134	7	64	37.07	14.03	384	-1.13	-0.43	-0.63	0.14
Sleman	IV	179	0	74	28.30	15.04	384	<-1.95	-0.38	-0.74	0.21
	V	167	7	78	41.74	15.04	384	-1.13	-0.37	-0.59	0.13
Kalasan	IV	187	1	75	37.40	17.80	384	-1.95	-0.38	-0.66	0.23
	V	180	5	79	43.25	14.76	384	-1.26	-0.36	-0.58	0.13
Yogya Barat	IV	162	0	84	39.60	18.51	384	<-1.95	-0.34	-0.63	0.21
	V	172	4	84	45.59	15.73	384	-1.34	-0.34	-0.56	0.14
Yogya Timur	IV	162	7	78	42.26	16.09	384	-1.13	-0.37	-0.58	0.13
	V	170	6	71	40.59	11.99	384	-1.19	-0.40	-0.60	0.12

Based on the results of phase I study, most teachers state that teaching creativity along with giving examples has been done. Meanwhile, theorytically, an ideal learning process to develop creativity should at least use applied learning model and ideational learning (Dettmer, 2006: 70-78).

Understanding of concept is likely targeted by the teachers in teaching, this is in line with the statement of Burke (2007: 58-63) on the importance of considering the possibility for balancing the standards-based learning and creativity based learning. Basically standards-based learning and creativity-based learning are the two opposite spectrum. Creative thinking is clearly apart from sequential thinking while analytical thinking ability is associated with standard and traditional education. If one of the components of the lesson is followed successfully, the balance

in thinking nature can be affected. Determining of how to integrate creativity into a standards-based system is very important to consider the learning needs of gifted learners.

In creative science learning, ideally the students are asked to perform discovery or inquiry publicly, or perform duties related to the investigation so that the learners perform activities such as creative activities carried out by scientists in scientific research. Cognitive approach states that learning can adopt developing pattern of creative reasoning. Natural science atudents are 'simple thinker', therefore they may use scientific process as it is performed by scientists or different process as well (Kind & Kind, 2007: 1-37). However it is difficult to be applied in Primary school because students of this grades are not sufficient enough to do such process so that teachers tend to concentrate on their understand of concept, which automatically develops convergent thinking skills. Teachers will rarely give questions with divergent answers. Croom & Stair (2005: 12-14) states that the divergent question is a question that does not expect yes no answer. This questions begin with question words like: "why", "how", "what you think", and will give many possible answers. Thus, the students will answer in various way which indicates divergent thingking. However, most elementary school students are in the state of convergent thinking, in accordance with their phase of concrete mental development.

Teachers' concern to not teaching creativity to students with low academic potential is not a reason because to be creative does not have to be smart. Ferrando et al study (2005: 21-50) showed low correlation between creativity and intelligence. Learners with high IQ are not always more creative. According to Cromie (2007: 1) studies do not always show a correlation between IQ and creativity levels. Some studies show that increase in creativity in line with increase in IQ to IQ as high as 120. Kyung Hee Kim (2005: 1) reported that the results of meta-analysis of 447 corelation coefficient showed that many of creativity scores had nothing to do with IQ scores, yet many also did. Article written by Rawat, et al (2012: 264-275) also argue that the development of creativity is closely linked to the development of skills to establish appropriate consideration in the different situations. Therefore, the development of creativity should be taught as early as possible. In this research also was developed the manual to developing instrument to measure the reatifity of SPS. This manual has been tried-out to the teachers and supervisors. The average score of the teacher's comprehension are 71.7 and the supervisor's comprehension are 68.8.

CONCLUSION

From the findings it can be concluded that SPS creativity measuring instruments aspects of life developed and tested in 2030 testee at 10 UPT / UPTD in Yogyakarta shows all the items fit the PCM model. Considering the average ability scores of participants which were still below the difficulty level of the items, recommendation given is that it is highly necessary to improve the teachers' ability in teaching SPS creativity aspects of life to students. The manual to developing instrument to measure the reatifity of SPS has been tried out with the good result.

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