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Kementerian Riset, Teknologi, dan Pendidikan Tinggi
Gedung BPPT II Lantai 19, Jl. MH. Thamrin No. 8 Jakarta Pusat
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PROTEKSI ISI LAPORAN AKHIR PENELITIAN

Dilarang menyalin, menyimpan, memperbanyak sebagian atau seluruh isi laporan ini dalam bentuk apapun kecuali oleh peneliti dan pengelola administrasi penelitian

LAPORAN AKHIR PENELITIAN MULTI TAHUN

ID Proposal: 5ce308f5-c298-4a0d-927d-b56b1a5f2ee7

laporan akhir Penelitian: tahun ke-1 dari 2 tahun

1. IDENTITAS PENELITIAN

A. JUDUL PENELITIAN

PENGEMBANGAN MODUL PROYEK IPAS DIGITAL DENGAN STRATEGI SCAMPER UNTUK
MENINGKATKAN KREATIVITAS SISWA SD PADA IMPLEMENTASI KURIKULUM MERDEKA

B. BIDANG, TEMA, TOPIK, DAN RUMPUN BIDANG ILMU

Bidang Fokus RIRN / Bidang Unggulan Perguruan Tinggi	Tema	Topik (jika ada)	Rumpun Bidang Ilmu
Sosial Humaniora, Seni Budaya, Pendidikan Penelitian Lapangan Dalam Negeri (Kecil)	-		Pgsd

C. KATEGORI, SKEMA, SBK, TARGET TKT DAN LAMA PENELITIAN

Kategori (Kompetitif Nasional/ Desentralisasi/ Penugasan)	Skema Penelitian	Strata (Dasar/ Terapan/ Pengembangan)	SBK (Dasar, Terapan, Pengembangan)	Target Akhir TKT	Lama Penelitian (Tahun)
Penelitian Kompetitif Nasional			SBK Riset Dasar	3	2

2. IDENTITAS PENGUSUL

Nama (Peran)	Perguruan Tinggi/ Institusi	Program Studi/ Bagian	Bidang Tugas	ID Sinta	H- Index
YUSINTA DWI ARIYANI - Ketua Pengusul	Universitas Alma Ata	Pendidikan Guru Sekolah Dasar	1. Mengkoordinasikan analisis kebutuhan pembelajaran IPAS di SD 2. Melakukan analisis kreativitas	6007557	0

			<p>siswa SD melalui analisis gaya berpikir dengan Yan-Piaw Creative-Critical thinking Test</p> <ol style="list-style-type: none"> 3. Memetakan materi-materi IPS pada mata pelajaran IPAS di SD 4. Menyusun dan menentukan tema-tema proyek IPAS 5. Mengkoordinasikan penyusunan proyek-proyek IPAS pada setiap tema yang dipilih 6. Menyusun panduan SCAMPER yang dapat digunakan dalam pengembangan panduan proyek 7. Menyusun instrumen penilaian kreativitas produk 8. Mengkoordinasikan perangkat-perangkat IT yang dapat diterapkan pada panduan Proyek IPAS 9. Mengkoordinasikan uji kelayakan melalui experts' judgment. 10. Melaksanakan Uji coba awal, uji lapangan utama dan uji lapangan operasional panduan proyek 11. Medesiminasikan hasil panduan proyek IPAS 		
INSIH WILUJENG - Anggota Pengusul	Universitas Negeri Yogyakarta	Pendidikan Sains	<ol style="list-style-type: none"> 1. Memetakan materi-materi IPA yang terintegrasi mata pelajaran IPAS SD dalam kurikulum merdeka; 2. Memberikan arahan topik-topik proyek sesuai kurikulum SD yang dapat mengintegrasikan bidang IPA dan IPS; 3. Membimbing pembuatan matriks pencapaian kreativitas siswa SD dengan menggunakan model proyek dengan strategi 	5992675	8

			SCAMPER; 4. Membimbing penyusunan panduan proyek IPAS dengan strategi SCAMPER pada kurikulum Merdeka;		
DHINA PUSPASARI WIJAYA - Anggota Pengusul	Universitas Alma Ata	Informatika	1. Melakukan analisis kebutuhan penerapan teknologi yang digunakan sebagai media dalam kurikulum merdeka; 2. Melakukan pemetaan teknologi informasi yang dapat digunakan dalam panduan proyek digital; 3. Menambahkan fitur teknologi digital dalam panduan proyek.	6709457	1

3. MITRA KERJASAMA PENELITIAN (JIKA ADA)

Pelaksanaan penelitian dapat melibatkan mitra kerjasama, yaitu mitra kerjasama dalam melaksanakan penelitian, mitra sebagai calon pengguna hasil penelitian, atau mitra investor

Mitra	Nama Mitra
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4. LUARAN DAN TARGET CAPAIAN

Luaran Wajib

Tahun Luaran	Jenis Luaran	Status target capaian (accepted, published, terdaftar atau granted, atau status lainnya)	Keterangan (url dan nama jurnal, penerbit, url paten, keterangan sejenis lainnya)
1	Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi	Accepted	Journal of Education (IF 0,22) https://journals.sagepub.com/home/jex Sage Publisher
1	Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi	Sedang direview	Journal of Education (IF 0,22) https://journals.sagepub.com/home/jex Sage Publisher
2	Artikel di Jurnal Internasional Terindeks di		International Journal of Instruction (SJR 0,50)

	Pengindeks Bereputasi		https://www.e-iji.net/ Gate Association for Teaching and Education
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Luaran Tambahan

Tahun Luaran	Jenis Luaran	Status target capaian (accepted, published, terdaftar atau granted, atau status lainnya)	Keterangan (url dan nama jurnal, penerbit, url paten, keterangan sejenis lainnya)
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5. ANGGARAN

Rencana anggaran biaya penelitian mengacu pada PMK yang berlaku dengan besaran minimum dan maksimum sebagaimana diatur pada buku Panduan Penelitian dan Pengabdian kepada Masyarakat

Total RAB 2 Tahun Rp. 0

Tahun 1 Total Rp. 0

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
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Tahun 2 Total Rp. 0

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
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Tahun 3 Total Rp. 0

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
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6. KEMAJUAN PENELITIAN

A. RINGKASAN

Pemberlakuan Kurikulum Merdeka memberikan konsekuensi pada semua satuan pendidikan yang ada di jenjang pendidikan dasar dan menengah untuk memberikan proporsi beban belajar proyek sebesar 20-30% dari total beban belajar. Pada satuan pendidikan SD, yang menarik dari pemberlakuan kurikulum merdeka adalah adanya mergerisasi IPA dan IPS menjadi IPAS, dimana mengharuskan guru mengajarkan IPA dan IPS secara terintegrasi. Padahal masih belum ada perguruan tinggi yang menghasilkan lulusan IPAS, sehingga menyulitkan guru untuk mengintegrasikan kedua bidang tersebut. Oleh karena itu perlu adanya kolaborasi multidisiplin dari pakar pendidik untuk menyusun modul proyek IPAS Digital yang dapat meningkatkan profil pelajar pancasila, khususnya pada aspek kreativitas. Upaya yang dilakukan untuk meningkatkan kreativitas hasil proyek adalah dengan mengintegrasikan strategi SCAMPER pada pelaksanaan proyek untuk menghasilkan produk kreatif melalui metode Substituted, Combine, Adapt, Modify, Put to another use, Eliminate, dan Reverse.

Tujuan dari penelitian ini adalah untuk memperoleh modul proyek IPAS digital yang layak, efektif dan praktis untuk meningkatkan kreativitas siswa SD. Metode yang digunakan merupakan penelitian dan

pengembangan dengan mengadopsi sepuluh tahapan Borg & Gall dan diujikan pada sekolah SD yang ada di Yogyakarta. Instrumen yang digunakan dalam penelitian ini terdiri atas skala pengukuran kreativitas produk, angket kelayakan modul proyek IPAS digital oleh ahli materi dan media pembelajaran, serta angket tingkat kepraktisan produk.

Luaran yang ditargetkan pada Tahun pertama diantaranya adalah 1). Accepted pada jurnal internasional bereputasi di International Journal of Evaluation and Research in Education (IJERE) SJR= 0,308 yang saat ini sudah ACCEPTED <https://ijere.iaescore.com/index.php/IJERE/index> dan 2) Panduan Proyek IPAS ber- ISBN yang diterbitkan di Media Sains ([https:// www.medsan.co.id/](https://www.medsan.co.id/)) yang sudah terbit (ISBN 978-623-195-693-4).

Hasil penelitian pada tahun pertama ini ditargetkan pada TKT 2 dimana hasil penelitian tersebut menunjukkan bahwa kesiapan guru untuk mengimplementasikan proyek dipengaruhi oleh efikasi dan sikap guru terutama pada domain motivation, resources, dan classroom management. Selain itu, hasil penelitian pada tahun pertama ini menunjukkan bahwa penggunaan proyek dipengaruhi oleh efikasi guru yang menentukan kepercayaan diri guru ketika mengelola kelas dan kemampuan mereka dalam mengajar (Instructional Strategies). Implikasi dari hasil penelitian tersebut memberikan gambaran bahwa modul proyek merupakan salah satu faktor penting pada domain resources untuk meningkatkan sikap guru terhadap proyek dan efikasi guru. Hasil pengembangan modul proyek menunjukkan bahwa modul proyek IPAS digital dapat dikelompokkan dalam lima tema, yaitu proyek lingkungan buatan, diorama siklus air, peta keanekaragaman, sistem tata surya dan ekonomi kreatif. Progress penyusunan modul proyek IPAS dalam bentuk LKPD dapat diakses melalui link berikut [https:// www.canva.com/ design/ DAFrIEXg6vc/59HS3_X6wRrT5Scf3kaRjg/ view? utm_content=DAFrIEXg6vc&utm_campaign=designshare&utm_medium=link&utm_source=publishsharelink](https://www.canva.com/design/DAFrIEXg6vc/59HS3_X6wRrT5Scf3kaRjg/view?utm_content=DAFrIEXg6vc&utm_campaign=designshare&utm_medium=link&utm_source=publishsharelink)

B. KATA KUNCI

Modul Proyek IPAS Digital; Strategi SCAMPER; Kreativitas; Kurikulum Merdeka

Pengisian poin C sampai dengan poin H mengikuti template berikut dan tidak dibatasi jumlah kata atau halaman namun disarankan ringkas mungkin. Dilarang menghapus/memodifikasi template ataupun menghapus penjelasan di setiap poin.

C. HASIL PELAKSANAAN PENELITIAN: Tuliskan secara ringkas hasil pelaksanaan penelitian yang telah dicapai sesuai tahun pelaksanaan penelitian. Penyajian meliputi data, hasil analisis, dan capaian luaran (wajib dan atau tambahan). Seluruh hasil atau capaian yang dilaporkan harus berkaitan dengan tahapan pelaksanaan penelitian sebagaimana direncanakan pada proposal. Penyajian data dapat berupa gambar, tabel, grafik, dan sejenisnya, serta analisis didukung dengan sumber pustaka primer yang relevan dan terkini.

Penelitian ini merupakan penelitian pengembangan menggunakan model Borg & Gall [1]. Adapun tahun pertama hanya dilakukan sampai pada tahap pengembangan, mencakup: tahap analisis kebutuhan, tahap perencanaan dan dan tahap pengembangan produk awal.

1. Analisis kebutuhan

Analisis kebutuhan dilakukan dengan melakukan studi pendahuluan dan pengumpulan informasi mengenai pelaksanaan proyek di Sekolah Dasar. Analisis kebutuhan tersebut dilakukan dengan melakukan pengukuran terhadap sikap guru terhadap pembelajaran berbasis proyek dan analisis efikasi guru. Sikap guru terhadap pembelajaran berbasis proyek diukur dengan menggunakan *Teachers' Attitude Toward Project Based Learning (PBL) scale*, dan efikasi guru diukur dengan menggunakan *Teachers' Efficacy Scale*.

a. Analisis efikasi guru dan sikap guru terhadap PBL

Hasil analisis statistik deskriptif sikap guru terhadap PBL, dan efikasi guru ditampilkan pada Tabel 1. Rerata sikap guru terhadap PBL adalah 2,89 (skala 4) dan rerata efikasi guru adalah 5,03 (skala 9).

Table 1. Statistik deskriptif sikap guru terhadap PBL dan efikasi guru

Skala	Rerata (Scale from 1 to 9)	Rentang	Standar Deviasi
1. Efikasi Guru	5,03	3,08-7,58	1,14
1.1. Student Engagement	5,21	1,75-8,25	1,50
1.2. Instructional Strategies	4,88	1,50-8,20	1,52
1.3. Classroom management	5,01	1,75-8,75	1,42
Scale	Mean (Scale from 1 to 4)	Range	SD
2. Sikap Guru terhadap PBL	2,89	2,18-3,75	0,26
2.1. Knowledge Dependence	2,54	1,50-4,00	0,41
2.2. Motivation	3,20	2,50-4,00	0,41
2.3. Resources	2,70	1,00-4,00	0,57
2.4. Classroom Management	3,10	2,00-4,00	0,44
2.5. System Restriction	3,00	2,00-4,00	0,36

b. Kesiapan guru dalam mengimplementasikan PBL berdasarkan sikap guru terhadap PBL

Terdapat tiga item yang ditambahkan pada instrumen *teachers' attitude toward PBL scale* untuk mengukur level guru dalam penggunaan PBL yaitu: "saya sudah terbiasa menggunakan PBL", "saya secara reguler melakukan proyek bersama siswa-siswa saya", dan "PBL adalah bagian dari pengajaran saya sehari-hari". Pernyataan tersebut terdiri dari 4 poin skala likert. Rerata dari ketiga pernyataan tersebut selanjutnya dikelompokkan pada dua kelompok yaitu "tidak pernah atau jarang menggunakan PBL" bagi yang memiliki rerata kurang dari 2,5 dan "sering atau selalu menggunakan PBL" bagi yang memiliki rerata lebih dari 2,5. Hasil pengelompokkan selanjutnya dilakukan uji beda pada setiap skala sikap guru terhadap PBL dan efikasi guru. Hasil analisis uji beda pada setiap sub skala sikap guru terhadap PBL dilakukan dengan menggunakan *independent sample t-test* karena hasil uji normalitas menggunakan Kolmogorov-Smirnov dan Lilliefors menunjukkan bahwa data terdistribusi normal ($p > 0,005$). Uji Cohens juga dilakukan untuk menguji *effect size* seperti yang ditampilkan pada Tabel 2.

Table 2. Uji beda sikap guru terhadap PBL berdasarkan penggunaan PBL

Subskala	N	Mean	t value	p	Cohen's d	
Knowledge Dependence	tidak pernah/jarang menggunakan PBL	47	2.63	-1.917	0.058	-
	sering/selalu menggunakan PBL	62	2.48			
Motivation*	tidak pernah/jarang menggunakan PBL	47	3.04	3.749	0.000	0.759
	sering/selalu menggunakan PBL	62	3.32			
Resources*	tidak pernah/jarang menggunakan PBL	47	2.43	4.647	0.000	0.902
	sering/selalu menggunakan PBL	62	2.90			
Classroom Management*						

Subskala	N	Mean	t value	p	Cohen's d
tidak pernah/jarang menggunakan PBL	47	2.95	3.183	0.002	0.616
sering/selalu menggunakan PBL	62	3.21			
System Restriction					
tidak pernah/jarang menggunakan PBL	47	2.93	1.559	0.122	-
sering/selalu menggunakan PBL	62	3.04			

*Terdapat perbedaan signifikan antar kelompok ($p < 0.05$).

Tabel 2 menunjukkan bahwa dari 109 guru sekolah dasar, 47 guru dikategorikan dalam kelompok "tidak/jarang menggunakan PBL" dan 62 guru dalam kelompok "sering/selalu menggunakan PBL". Hasilnya ditemukan bahwa 57% guru telah rutin menerapkan PBL. Sikap Guru dalam menerapkan PBL terkait dengan sikap guru terhadap PBL, khususnya pada subskala *motivation*, *resources*, dan *classroom management*. Temuan ini mirip dengan penelitian sebelumnya yang mengungkapkan bahwa sikap guru memiliki hubungan positif dengan penggunaan PBL [2]. Penerapan PBL perlu pembiasaan tidak hanya bagi guru tetapi juga bagi siswa karena PBL merupakan pendekatan dengan penyelidikan mendalam dengan menghasilkan produk yang bermakna [3]. Suasana pembelajaran akan berbeda dengan pembelajaran tradisional, sehingga peran guru dan siswa akan berbeda.

Pada subskala lain ditemukan tidak terdapat perbedaan yang signifikan dalam subskala *knowledge dependency* dan *system restriction*, yang menunjukkan bahwa pengalaman praktis tidak cukup untuk mengatasi semua batasan. Hal ini dapat dipahami karena PBL merupakan pendekatan yang sudah dikenal oleh para guru dan terus ditambahkan dalam pelatihan guru. Guru percaya bahwa PBL yang sukses tidak mengharuskan siswa untuk memiliki pengetahuan konten yang luas atau PBL akan efektif dengan siswa yang berprestasi rendah. Selain itu, penerapan kurikulum baru memberikan alokasi waktu 20% dari total waktu pembelajaran. Kebijakan ini dapat membantu guru untuk mengurangi batasan sistem yang selama ini dianggap sebagai batasan dalam penggunaan PBL [4]. Ke depan, upaya yang perlu dilakukan untuk meningkatkan kesiapan guru dalam menggunakan PBL lebih memperhatikan peningkatan *motivation*, *resources*, dan *classroom management*. Peningkatan subskala dapat dilakukan dengan memberikan pedoman pelaksanaan PBL di setiap jenjang pendidikan yang dapat diadaptasi dan dimodifikasi oleh guru. Selain itu, pemberian kesempatan *sharing session* dalam penerapan PBL di komunitas juga dapat membantu guru meningkatkan subskala tersebut [5]. Setiap guru dapat saling memotivasi, dan berbagi pengalaman, misalnya dalam menyusun pedoman proyek, manajemen kerja kelompok siswa, mengatur kedisiplinan siswa, atau mengantisipasi siswa yang frustrasi dalam belajar.

c. Kesiapan guru dalam mengimplementasikan PBL berdasarkan efikasi guru

Analisis hubungan antara level penggunaan PBL dengan efikasi guru menggunakan metode yang sama dengan metode yang digunakan untuk menganalisis level penggunaan PBL terhadap sikap guru terhadap PBL. Hasil pengelompokan memiliki ukuran yang sama, akan tetapi hasil uji normalitas dengan menggunakan Kolmogorov-Smirnov yang dikoreksi oleh Lilliefors menemukan bahwa data terdistribusi tidak normal ($p < 0,005$). Oleh karena itu, karena lemahnya normalitas maka analisis menggunakan uji non parametrik dengan menggunakan *Mann-Whitney U test*. Hasil uji menemukan bahwa terdapat perbedaan signifikan antara guru-guru yang tidak pernah/jarang menggunakan PBL dengan guru-guru yang sering/selalu menggunakan PBL $t(107)=8,102$, $p=0,000$, Cohen's $d = 2,541$. Pada Tabel 3 ditampilkan hasil uji *Mann-Whitney U test* pada setiap subskala efikasi guru yang dianalisis.

Table 3. Efikasi guru antara guru yang menggunakan PBL

Subskala	N	Mean	U	Z	p	Cohen's d
Student Engagement*						
tidak pernah/jarang menggunakan PBL	47	4,16	400,500	6,473	0,000	1,553
sering/selalu menggunakan PBL	62	6,01				
Classroom Management*						
tidak pernah/jarang menggunakan PBL	47	3,80	391,000	6,533	0,000	1,580
sering/selalu menggunakan PBL	62	5,69				
Instructional Strategies*						
tidak pernah/jarang menggunakan PBL	47	4,06	438,000	6,245	0,000	1,453
sering/selalu menggunakan PBL	62	5,74				

*Terdapat perbedaan signifikan antar kelompok ($p < 0.05$).

Tabel 3 menampilkan bahwa terdapat perbedaan dalam penggunaan rutin PBL pada setiap subskala *teachers' efficacy: student engagement, classroom management, dan instructional strategies*. Temuan ini menunjukkan bahwa penggunaan PBL akan berdampak pada *teachers' efficacy*. Serupa dengan penelitian sebelumnya yang menemukan bahwa hubungan positif yang ditemukan antara PBL dan self-efficacy guru menunjukkan bahwa praktek pembelajaran tidak hanya merupakan hasil dari self-efficacy guru, tetapi juga menyebabkan perubahan self-efficacy guru [6]. Secara khusus, Nie *et al.* menemukan bahwa efikasi diri guru

menentukan penggunaan praktik pembelajaran konstruktivis [7].

Hubungan antara rutinitas penggunaan PBL dan *teachers' efficacy* tidak hanya untuk guru dalam jabatan, tetapi juga untuk guru prajabatan. Banyak peneliti, termasuk Manowalulou dan Reeve telah meneliti kemandirian pribadi pada mahasiswa sarjana dan menemukan bahwa selama tahun keempat program mereka, ketika mereka mulai mengajar kelas, *sense of efficacy* mereka terus meningkat [8]. Temuan ini selanjutnya oleh temuan lain yang menunjukkan bahwa praktik guru yang mengikuti kursus pascasarjana tambahan dalam pendidikan menunjukkan tingkat efikasi pribadi yang lebih tinggi. Demikian pula, dalam sebuah penelitian yang mengeksplorasi dampak PBL pada keyakinan dan prestasi *self-efficacy* mahasiswa sarjana yang mengamati peningkatan yang lebih besar dibandingkan dengan mereka yang diajarkan dan belajar sains melalui metode tradisional [9].

d. Dampak tingkat efikasi guru terhadap sikap guru terhadap PBL

Level efikasi guru dibedakan dengan metode *median split*. Nilai median dari efikasi guru adalah 5,17, maka pengelompokan data berdasarkan distribusi frekuensi nilai median. Guru dikelompokkan ke dalam *low teacher efficacy* jika memiliki skor kurang dari 5,08 dan dikategorikan *high teacher efficacy* jika memiliki skor lebih besar dari 5.25. Hasil pengelompokan skor median memperoleh ukuran sampel yang hampir sama dan memperlihatkan bahwa data di kedua kelompok terdistribusi normal berdasarkan hasil uji Kolmogorov-Smirnov yang dikoreksi oleh Lilliefors ($p > 0,05$). Oleh karena itu, *independent sample t-test* digunakan untuk menguji perbedaan antara kedua kelompok. Hasil uji memperlihatkan bahwa terdapat perbedaan sikap guru terhadap PBL antara guru yang memiliki efikasi rendah (*low teacher efficacy*) dan guru yang memiliki efikasi tinggi (*high teacher efficacy*) $t(104)=5,784$, $p=0,000$, Cohen's $d=1,125$. Hasil analisis *independent sample t-test* pada setiap subskala disajikan pada Tabel 4.

Table 4. Sikap guru terhadap PBL antara guru yang memiliki efikasi rendah dan tinggi

Subskala	N	Mean	t value	p	Cohen's d
Knowledge Dependence					
Low teacher efficacy	52	2.62	-1.666	0.099	-
High teacher efficacy	54	2.48			
Motivation*					
Low teacher efficacy	52	3.10	2.604	0.011	0.508
High teacher efficacy	54	3.30			
Resources*					
Low teacher efficacy	52	2.48	3.999	0.000	0.776
High teacher efficacy	54	2.89			
Classroom Management*					
Low teacher efficacy	52	3.00	2.332	0.022	0.453
High teacher efficacy	54	3.20			
System Restriction*					
Low teacher efficacy	52	2.92	2.066	0.041	0.402
High teacher efficacy	54	3.06			

*Terdapat perbedaan signifikan antar kelompok ($p < 0,05$).

Tabel 4 menemukan bahwa guru yang memiliki *sense of teachers' efficacy* yang lebih tinggi memiliki sikap yang lebih positif. Pengaruh tertinggi adalah pada *resources* saat menggunakan PBL. Guru yang memiliki efikasi tinggi memiliki keyakinan yang lebih besar bahwa PBL dapat digunakan bahkan dengan *resources* yang terbatas seperti komputer, laboratorium, atau keterbatasan pengembangan profesional. Mereka dapat mengembangkan ide-ide baru untuk menutupi keterbatasan *resources* sekolah. Hal ini sejalan dengan M. Tschannen-Moran dan Hoy yang menyatakan bahwa *sense of teachers' efficacy* yang lebih tinggi akan memberikan peluang untuk menjadi guru yang lebih terbuka terhadap ide-ide baru dan lebih bersedia menerapkan pendekatan baru [10]. Temuan ini mendukung temuan sebelumnya bahwa kemandirian guru merupakan faktor penentu dalam sesi pelatihan yang dilakukan dalam penggunaan pendekatan baru [11]. Selanjutnya, dalam kelompok guru yang menerima pelatihan, mereka yang memiliki tingkat *self-efficacy* lebih tinggi cenderung menunjukkan penguasaan pembelajaran yang signifikan, lebih selaras dengan metode pengajaran mereka saat ini, dan kurang menantang untuk diimplementasikan.

e. Kesimpulan dan implikasi hasil analisis kebutuhan

Secara keseluruhan, kami menyimpulkan bahwa kesiapan guru untuk mengimplementasikan PBL dipengaruhi oleh efikasi dan sikap guru terhadap PBL, seperti yang ditunjukkan dalam penelitian sebelumnya. Subskala sikap guru terhadap PBL yang paling dominan adalah *motivation*, *resources*, dan *classroom management*. Sedangkan tingkat penggunaan PBL tidak dipengaruhi oleh *knowledge dependency* dan *system restriction*. Tingkat penggunaan PBL juga dipengaruhi oleh efikasi guru pada semua subskala: *student engagement*, *classroom management*, dan *instructional strategies*. Hal ini menunjukkan bahwa guru yang memiliki *sense of teachers' efficacy* yang lebih tinggi menunjukkan kepercayaan diri yang lebih besar pada kemampuan mereka untuk mengelola kelas, dan ini juga meluas ke kemampuan mereka dalam

mengelola kelas selama pelajaran PBL. Studi kami juga menemukan bahwa tingkat efikasi guru berpengaruh positif terhadap sikap guru terhadap PBL pada semua subskala, kecuali pada subskala ketergantungan pengetahuan.

Implikasi penelitian ini dapat memberikan gambaran tentang kesiapan guru SD dalam jabatan supaya dapat menggunakan PBL. Beberapa upaya yang dapat dilakukan adalah pengembangan profesional di masa depan dapat berkonsentrasi pada pelatihan praktis, termasuk mengalokasikan lebih banyak waktu untuk persuasi verbal, seperti memberikan informasi tentang strategi pengajaran yang efektif. Selain itu, pengalaman pengganti dapat dimasukkan, seperti melakukan demonstrasi strategi dengan siswa lokal, dan pengalaman penguasaan yang dilindungi dapat didorong melalui sesi perencanaan dan latihan dengan rekan kerja. Pada penelitian ini kami berharap dapat memberikan kontribusi dalam penyediaan *resources* bagi guru berupa modul proyek IPAS digital yang dapat menjadi gambaran bagi guru untuk melaksanakan proyek di setiap satuan pendidikan SD. Hal ini tidak terlepas dari temuan hasil analisis kebutuhan kami yang menemukan bahwa *resources* menjadi salah satu subskala yang signifikan dalam menentukan level penggunaan PBL, sikap guru terhadap PBL dan efikasi guru.

2. Perencanaan

a. Analisis materi IPA dan IPS pada kurikulum merdeka mata pelajaran IPAS

Analisis materi IPA dan IPS dilakukan dengan menganalisis setiap Capaian Pembelajaran (CP) pada kurikulum merdeka mata pelajaran IPAS yang terdapat pada fase A, fase B dan fase C. Hasil analisis CP berdasarkan Surat Keputusan Kepala Badan Standar, Kurikulum dan Asesmen Pendidikan Kemendikristek Nomo 008/H/KR/2022 tentang Capaian Pembelajaran pada pendidikan anak usia dini, jenjang pendidikan dasar, dan jenjang pendidikan menengah ditampilkan pada Tabel 5.

Tabel 5. Analisis Materi IPA dan IPS pada kurikulum merdeka mata pelajaran IPAS

NO	CAPAIAN PEMBELAJARAN	MATERI	BIDANG KAJIAN
FASE A			
1	peserta didik mengidentifikasi dan mengajukan pertanyaan tentang apa yang ada pada dirinya maupun kondisi di lingkungan rumah dan sekolah serta mengidentifikasi permasalahan sederhana yang berkaitan dengan kehidupan sehari-hari.	Lingkungan kita	IPA
2	Peserta didik mengoptimalkan penggunaan pancaindra untuk melakukan pengamatan dan bertanya tentang makhluk hidup dan perubahan benda ketika diberikan perlakuan tertentu. Peserta didik menggunakan hasil pengamatan untuk menjelaskan pola sebab akibat sederhana dengan menggunakan beberapa media/alat bantu.	Makhluk hidup dan perubahan benda	IPA
3	Peserta didik mengenal anggota tubuh manusia (pancaindra), menjelaskan fungsinya dan cara merawatnya dengan benar.	Organ tubuh kita	IPA
4	Peserta didik dapat membedakan antara hewan dan tumbuhan sesuai dengan bentuk dan ciri-ciri umumnya.	Hewan dan tumbuhan	IPA
5	Peserta didik mampu mengelaborasi pemahamannya tentang konsep waktu (pagi-siang-sore-malam), mengenal nama-nama hari, nama bulan, kondisi cuaca dalam keterkaitannya dengan aktivitas sehari-hari	Cuaca	IPA
6	Peserta didik mampu mendeskripsikan identitas diri (ciri-ciri fisik, kegemaran) dan orang-orang di sekitarnya (keluarga, teman dan tetangga) sehingga dapat menerima perbedaan yang ada pada diri manusia.	Keragaman (fase C yg miniature organ manusia)	IPS
7	Peserta didik mampu mendeskripsikan silsilah keluarga, peran serta tanggung jawabnya sebagai anggota keluarga/kelompok/sekolah.	Hak dan kewajiban	IPS
8	Peserta didik dapat mendeskripsikan benda-benda di lingkungan sekitar sebagai bagian dari lingkungan alami dan buatan, mendeskripsikan kondisi lingkungan rumah dan sekolah dalam bentuk gambar/denah sederhana.	Lingkungan alami dan buatan	IPA
9	Peserta didik dapat membedakan lingkungan sehat dan tidak sehat, mencerminkan perilaku hidup sehat dan ikut serta menjaga kebersihan lingkungan rumah dan sekolah.	Lingkungan sehat dan tidak sehat	IPA
FASE B			
1	Peserta didik menganalisis hubungan antara bentuk serta fungsi bagian tubuh pada manusia (pancaindra). Peserta didik dapat membuat	Siklus makhluk hidup	IPA

NO	CAPAIAN PEMBELAJARAN	MATERI	BIDANG KAJIAN
	simulasi menggunakan bagan/alat bantu sederhana tentang siklus hidup makhluk hidup.		
2	Peserta didik dapat mengidentifikasi masalah yang berkaitan dengan pelestarian sumber daya alam di lingkungan sekitarnya dan kaitannya dengan upaya pelestarian makhluk hidup.	Sumber daya alam	IPS
3	Peserta didik mengidentifikasi proses perubahan wujud zat dan perubahan bentuk energi dalam kehidupan sehari-hari.	Perubahan wujud zat	IPA
4	Peserta didik mengidentifikasi sumber dan bentuk energi serta menjelaskan proses perubahan bentuk energi dalam kehidupan sehari-hari (contoh: energi kalor, listrik, bunyi, cahaya).	Sumber dan bentuk energi	IPA
5	Peserta didik memanfaatkan gejala kemagnetan dalam kehidupan sehari-hari, mendemonstrasikan berbagai jenis gaya dan pengaruhnya terhadap arah, gerak dan bentuk benda.	Magnet	IPA
6	Peserta didik mendeskripsikan terjadinya siklus air dan kaitannya dengan upaya menjaga ketersediaan air.	Siklus air	IPA
7	Di akhir fase ini, peserta didik menjelaskan tugas, peran, dan tanggung jawab sebagai warga sekolah serta mendeskripsikan bagaimana interaksi sosial yang terjadi di sekitar tempat tinggal dan sekolah.	Interaksi sosial	IPS
8	Peserta didik mengidentifikasi ragam bentang alam dan keterkaitannya dengan profesi masyarakat.	Bentang alam	IPS
9	Peserta didik mampu menunjukkan letak kota/kabupaten dan provinsi tempat tinggalnya pada peta konvensional/digital.	Peta	IPS
10	Peserta didik mendeskripsikan keanekaragaman hayati, keragaman budaya, kearifan lokal dan upaya pelestariannya.	Keanekaragaman	IPS
11	Peserta didik mengenal keragaman budaya, kearifan lokal, sejarah (baik tokoh maupun periodisasinya) di provinsi tempat tinggalnya serta menghubungkan dengan konteks kehidupan saat ini.	Keanekaragaman	IPS
12	Peserta didik mampu membedakan antara kebutuhan dan keinginan, mengenal nilai mata uang dan mendemonstrasikan bagaimana uang digunakan untuk mendapatkan nilai manfaat/ memenuhi kebutuhan hidup sehari-hari.	Kebutuhan hidup sehari-hari	IPS
13	Di akhir fase ini, peserta didik menjelaskan tugas, peran, dan tanggung jawab sebagai warga sekolah serta mendeskripsikan bagaimana interaksi sosial yang terjadi di sekitar tempat tinggal dan sekolah.	Interaksi sosial	IPS
FASE C			
1	Peserta didik melakukan simulasi dengan menggunakan gambar/bagan/alat/media sederhana tentang sistem organ tubuh manusia (sistem pernafasan/pencernaan/peredaran darah) yang dikaitkan dengan cara menjaga kesehatan organ tubuhnya dengan benar.	Organ tubuh manusia	IPA
2	Peserta didik menyelidiki bagaimana hubungan saling ketergantungan antar komponen biotik/abiotik dapat memengaruhi kestabilan suatu ekosistem di lingkungan sekitarnya.	Komponen biotik dan abiotik	IPA
3	Berdasarkan pemahamannya terhadap konsep gelombang (bunyi dan cahaya) peserta didik mendemonstrasikan bagaimana penerapannya dalam kehidupan sehari-hari. Peserta didik mendeskripsikan adanya ancaman krisis energi yang dapat terjadi serta mengusulkan upaya-upaya individu maupun kolektif yang dapat dilakukan untuk menghemat penggunaan energi dan serta penemuan sumber energi alternatif yang dapat digunakan menggunakan sumber daya yang ada di sekitarnya.	Bunyi dan cahaya	IPA
4	Peserta didik mendemonstrasikan bagaimana sistem tata surya bekerja dan kaitannya dengan gerak rotasi dan revolusi bumi. Peserta didik merefleksikan bagaimana perubahan kondisi alam di permukaan bumi terjadi akibat factor alam maupun perbuatan manusia, mengidentifikasi pola hidup yang menyebabkan terjadinya permasalahan lingkungan serta memprediksi dampaknya terhadap kondisi sosial kemasyarakatan, ekonomi.	Sistem tata surya	IPA
5	Di akhir fase ini peserta didik menggunakan peta konvensional/digital untuk mengenal letak dan kondisi geografis negara Indonesia. Peserta didik mengenal keragaman budaya nasional yang dikaitkan dengan konteks kebhinekaan.	Letak geografis Indonesia	IPS

NO	CAPAIAN PEMBELAJARAN	MATERI	BIDANG KAJIAN
6	Peserta didik menceritakan perjuangan bangsa Indonesia dalam melawan imperialisme, merefleksikan perjuangan para pahlawan dalam upaya merebut dan mempertahankan kemerdekaan serta meneladani perjuangan pahlawan dalam tindakan nyata sehari-hari.	Perjuangan bangsa Indonesia	IPS
7	Di akhir fase ini, peserta didik mengenal berbagai macam kegiatan ekonomi masyarakat dan ekonomi kreatif di lingkungan sekitar.	ekonomi kreatif	IPS
8	Di akhir fase ini, peserta didik mengenal berbagai macam kegiatan ekonomi masyarakat dan ekonomi kreatif di lingkungan sekitar.	ekonomi kreatif	IPS

b. Analisis tema-tema proyek

Terdapat lima proyek dalam modul ini dari mulai fase A, fase B dan fase C seperti yang ditampilkan pada Tabel 6.

Tabel 6. Penentuan tema-tema proyek di setiap fase

FASE	TEMA PROYEK	CAPAIAN PEMBELAJARAN	MATERI
A	Membuat miniature lingkungan buatan.	<ul style="list-style-type: none"> Peserta didik mengidentifikasi dan mengajukan pertanyaan tentang apa yang ada pada dirinya maupun kondisi di lingkungan rumah dan sekolah serta mengidentifikasi permasalahan sederhana yang berkaitan dengan kehidupan sehari-hari 	Lingkungan Kita
		<ul style="list-style-type: none"> Peserta didik dapat membedakan antara hewan dan tumbuhan sesuai dengan bentuk dan ciri-ciri umumnya. 	Hewan dan tumbuhan
		<ul style="list-style-type: none"> Peserta didik mampu mendeskripsikan silsilah keluarga, peran serta tanggung jawabnya sebagai anggota keluarga/kelompok/sekolah. 	Hak dan kewajiban
B	Diaroma siklus air	<ul style="list-style-type: none"> Peserta didik mengidentifikasi proses perubahan wujud zat dan perubahan bentuk energi dalam kehidupan sehari-hari. 	Perubahan wujud zat
		<ul style="list-style-type: none"> Peserta didik mendeskripsikan terjadinya siklus air dan kaitannya dengan upaya menjaga ketersediaan air. 	Siklus air
		<ul style="list-style-type: none"> Peserta didik menjelaskan tugas, peran, dan tanggung jawab sebagai warga sekolah serta mendeskripsikan bagaimana interaksi sosial yang terjadi di sekitar tempat tinggal dan sekolah. 	Interaksi sosial
	Peta keanekaragaman	<ul style="list-style-type: none"> Peserta didik menganalisis hubungan antara bentuk serta fungsi bagian tubuh pada manusia (pancaindra). Peserta didik dapat membuat simulasi menggunakan bagan/alat bantu sederhana tentang siklus hidup makhluk hidup. 	Siklus makhluk hidup
		<ul style="list-style-type: none"> Peserta didik mengidentifikasi ragam bentang alam dan keterkaitannya dengan profesi masyarakat. 	Bentang alam
		<ul style="list-style-type: none"> Peserta didik mampu menunjukkan letak kota/kabupaten dan provinsi tempat tinggalnya pada peta konvensional/digital. 	Peta
		<ul style="list-style-type: none"> Peserta didik mendeskripsikan keanekaragaman hayati, keragaman budaya, kearifan lokal dan upaya pelestariannya. 	Keanekaragaman
C	Miniatur sistem tata surya	<ul style="list-style-type: none"> Peserta didik mendemonstrasikan bagaimana sistem tata surya bekerja dan kaitannya dengan gerak rotasi dan revolusi bumi. Peserta didik merefleksikan bagaimana perubahan kondisi alam di permukaan bumi terjadi akibat factor alam maupun perbuatan manusia, mengidentifikasi pola hidup yang menyebabkan terjadinya permasalahan lingkungan serta memprediksi dampaknya terhadap kondisi sosial kemasyarakatan, 	Sistem tata surya

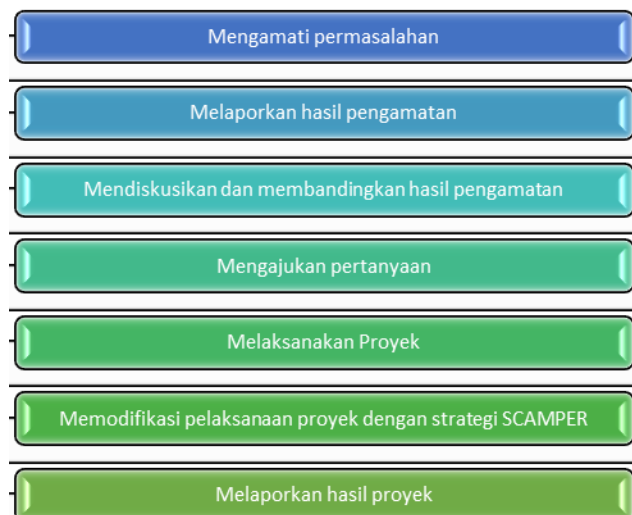
FASE	TEMA PROYEK	CAPAIAN PEMBELAJARAN	MATERI
		ekonomi.	
		<ul style="list-style-type: none"> • Di akhir fase ini peserta didik menggunakan peta konvensional/digital untuk mengenal letak dan kondisi geografis negara Indonesia. Peserta didik mengenal keragaman budaya nasional yang dikaitkan dengan konteks kebhinekaan. 	Letak geografis Indonesia
	Ekonomi kreatif berbahan bekas	<ul style="list-style-type: none"> • Di akhir fase ini, peserta didik mengenal berbagai macam kegiatan ekonomi masyarakat dan ekonomi kreatif di lingkungan sekitar. • Peserta didik menyelidiki bagaimana hubungan saling ketergantungan antar komponen biotik/abiotik dapat memengaruhi kestabilan suatu ekosistem di lingkungan sekitarnya. 	ekonomi kreatif Komponen biotik dan abiotik

c. Analisis teknologi yang diintegrasikan dalam modul proyek

Berdasarkan hasil analisis terdapat dua aplikasi yang digunakan yaitu Canva dan Google site. Canva digunakan untuk melakukan desain pembuatan modul, sedangkan google site akan digunakan untuk menyebarluaskan semua kebutuhan guru dalam menerapkan modul seperti lembar kerja peserta didik dan penilaian.

3. Pengembangan produk awal

Acuan dalam pengembangan modul proyek adalah lembar kerja peserta didik yang mengikuti tujuh tahapan berikut.



Gambar 1. Tahapan LKPD

Adapun draft pengembangan produk awal dapat dilihat pada link berikut https://www.canva.com/design/DAFrEXg6vc/59HS3_X6wRrT5Scf3kaRjg/view?utm_content=DAFrEXg6vc&utm_campaign=designshare&utm_medium=link&utm_source=publishsharelink

D. STATUS LUARAN: Tuliskan jenis, identitas dan status ketercapaian setiap luaran wajib dan luaran tambahan (jika ada) yang dijanjikan. Jenis luaran dapat berupa publikasi, perolehan kekayaan intelektual, hasil pengujian atau luaran lainnya yang telah dijanjikan pada proposal. Uraian status luaran harus didukung dengan bukti kemajuan ketercapaian luaran sesuai dengan luaran yang dijanjikan. Lengkapi isian jenis luaran yang dijanjikan serta unggah bukti dokumen ketercapaian luaran wajib dan luaran tambahan melalui BIMA.

Luaran pada tahun pertama adalah 1) Luarannya wajib berupa satu artikel pada jurnal internasional bereputasi dengan judul “*Primary Teachers' Readiness to use Project: Investigate Teachers' efficacy and attitude toward Project-Based Learning (PBL)*” dengan status under review round 2 di International Journal of evaluation and educational research (IJERE). 2) Luarannya tambahan berupa satu buku ber-ISBN berupa lembar kerja peserta didik (LKPD)

IPAS digital dengan bantuan SCAMPER yang sudah pada tahap pengajuan ISBN. Status luaran tersebut selanjutnya dijabarkan pada Tabel 7.

Tabel 7. Status luaran penelitian

No	Luaran	Jenis Luaran	Capaian	Keterangan
1	Artikel pada jurnal internasional bereputasi	Wajib	100%	ACCEPTED
2	Buku ber-ISBN	Tambahan	100%	Buku Terdaftar ISBN 978-623-195-693-4 https://drive.google.com/file/d/1M1-iS8RD_fFku6fYGWZzAQcSWHfaLubp/view?usp=share_link

E. PERAN MITRA: Tuliskan realisasi kerjasama dan kontribusi Mitra baik *in-kind* maupun *in-cash* (untuk Penelitian Terapan, Penelitian Pengembangan, PTUPT, PPUPT serta KRUP). Bukti pendukung realisasi kerjasama dan realisasi kontribusi mitra dilaporkan sesuai dengan kondisi yang sebenarnya. Bukti dokumen realisasi kerjasama dengan Mitra diunggah melalui BIMA.

Adapun realisasi kerja sama dan kontribusi mitra berupa:

1. Memberikan masukan terkait proses analisis kebutuhan guru SD dalam penggunaan proyek, rancangan instrumen analisis kebutuhan, analisis materi IPAS dalam kurikulum merdeka, dan memfinalisasi tahapan proyek
2. Bersama-sama dengan Tim Pengusul, menyusun luaran wajib dan luaran tambahan
3. Tim Mitra juga memberikan masukan dan review-review dari artikel tersebut.
4. Tim Mitra membantu mengembangkan lembar validasi ahli materi dan penyusunan lembar kerja peserta didik (LKPD)

F. KENDALA PELAKSANAAN PENELITIAN: Tuliskan kesulitan atau hambatan yang dihadapi selama melakukan penelitian dan mencapai luaran yang dijanjikan, termasuk penjelasan jika pelaksanaan penelitian dan luaran penelitian tidak sesuai dengan yang direncanakan atau dijanjikan.

Kendala dalam pelaksanaan penelitian ini terletak pada luaran wajib yang awalnya ditargetkan untuk diterima di bulan November kemungkinan akan mundur ke bulan Desember, karena menimbang proses review yang mengikuti prosedur jurnal yang dituju.

G. RENCANA TAHAPAN SELANJUTNYA: Tuliskan dan uraikan rencana penelitian di tahun berikutnya berdasarkan indikator luaran yang telah dicapai, rencana realisasi luaran wajib yang dijanjikan dan tambahan (jika ada) di tahun berikutnya serta *roadmap* penelitian keseluruhan. Pada bagian ini diperbolehkan untuk melengkapi penjelasan dari setiap tahapan dalam metoda yang akan direncanakan termasuk jadwal berkaitan dengan strategi untuk mencapai luaran seperti yang telah dijanjikan dalam proposal. Jika diperlukan, penjelasan dapat juga dilengkapi dengan gambar, tabel, diagram, serta pustaka yang relevan. Jika laporan kemajuan merupakan laporan pelaksanaan tahun terakhir, pada bagian ini dapat dituliskan rencana penyelesaian target yang belum tercapai.

Tahap selanjutnya akan dipetakan kegiatan untuk penelitian pada tahun kedua, yaitu uji efektivitas modul proyek IPAS digital dengan bantuan SCAMPER melalui uji coba produk awal, uji coba lapangan utama, uji coba operasional kemudian dilakukan uji kepraktisan dan yang terakhir yaitu diseminasi hasil penelitian. Mengingat keberhasilan yang dilaksanakan pada tahun pertama yang dibuktikan dengan konsistennya peneliti dalam mengikuti semua tahapan dari DRPM dan terpenuhinya luaran yang dijanjikan. Maka peneliti sangat berharap, bahwa penelitian ini dapat dilanjutkan pada tahun kedua supaya dapat memberikan dampak kepada guru-guru yang menjadi target diseminasi pada penelitian selanjutnya.

H. DAFTAR PUSTAKA: Penyusunan Daftar Pustaka berdasarkan sistem nomor sesuai dengan urutan pengutipan. Hanya pustaka yang disitasi pada laporan kemajuan yang dicantumkan dalam Daftar Pustaka.

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**SURAT PERNYATAAN KEHENDAK
(LETTER OF INTENT)**

KERJASAMA DI BIDANG PENELITIAN DALAM NEGERI

Surat Pernyataan Kehendak (*letter of intent*) antara Yusinta Dwi Ariyani, M.Pd., dari Program Studi S-1 Pendidikan Guru Sekolah Dasar (PGSD), Fakultas Ilmu Tarbiyah dan Keguruan, Universitas Alma Ata dengan Prof. Dr. Insih Wilujeng, M.Pd. dari Program Studi S-2 Pendidikan Ilmu Pengetahuan Alam, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Yogyakarta.

Dengan ini kami mengadakan kerjasama penelitian berjudul "*Pengembangan Modul Proyek IPAS Digital dengan Strategi SCAMPER untuk Meningkatkan Kreativitas Siswa SD pada Implementasi Kurikulum Merdeka*". Kedua belah pihak bersepakat dan berkomitmen untuk melaksanakan kegiatan penelitian tersebut sesuai dengan pembagian tugas yang tercantum pada usulan penelitian. Pengaturan Pelaksanaan ini hanya berlaku untuk satu kegiatan yang disebutkan di atas dan secara otomatis akan menjadi tidak berlaku ketika kegiatan tersebut telah dilaksanakan dan semua hak dan kewajiban telah dipenuhi oleh kedua belah pihak. Kegiatan timbal balik ataupun pendanaan yang timbul dari kerjasama ini dibebankan pada pendanaan penelitian yang disetujui oleh Direktorat Riset dan Pengabdian Masyarakat (DRPM) Kemendikbud. Perjanjian kerjasama ini berlaku paling lama untuk penelitian yang disetujui pada Tahun Anggaran 2023, dan menyesuaikan dengan persetujuan dari usulan tahun berikutnya.

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Primary Teachers' Readiness to use Project: Investigate Teachers' efficacy and attitude toward Project-Based Learning (PBL)

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ABSTRACT (10 PT)

The purpose of our study was to investigate primary teachers' readiness to use PBL using teachers' efficacy and teachers' attitude toward PBL. A correlational descriptive design was set as the research design on 109 primary teachers from various schools who had participated in collaborative work projects in 2023. To collect data, teachers' efficacy and teachers' attitude scale were used as instrument. The results found that the level of use of PBL was influenced by teachers' attitude toward PBL for each subscale except on the knowledge dependence and system restriction. We also found that the level of use of PBL has a positive relationship with each subscale of teachers' efficacy and the level of teachers' efficacy is influenced by teachers' attitude toward PBL for each subscale, except for the knowledge dependence. Implications of this study are expected to be considerations for professional development that focus on more concrete practical training.

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1. INTRODUCTION (10 PT)

Project-Based Learning (PBL) is an instructional approach that has gained recognition worldwide for its effectiveness in promoting active learning, critical thinking, and problem-solving skills among students [1]. By engaging students in real-world projects, PBL encourages them to investigate, create, and present solutions to authentic problems, resulting in a deeper understanding of the subject matter [2]. PBL challenges students to think critically, analyze information, and develop problem-solving skills as they work on complex, authentic projects [3]. They learn to apply their knowledge and creativity to find innovative solutions.

In the context of Indonesian primary education, the integration of innovative teaching methodologies (such as PBL) has become increasingly important. As a country with a strong focus on education as a driver of social and economic development, Indonesia recognizes the need to foster students' critical and creative thinking skills to meet the demands of the 21st century [4]. Therefore, understanding the readiness faced by primary teachers in implementing PBL is crucial in advancing educational practices and enhancing student learning outcomes.

Although several literature sources have suggested teachers to teach using PBL [5], it is still found that some teachers use traditional approach. Before adopting the new approach, teachers encounter a variety of obstacles that must be surmounted, extending beyond a specific instructional method. The instructional method was categorized into three clusters: technical, political, and cultural [6]. Technical barriers involve teachers' existing reliance on textbooks, assessment challenges, and difficulties in managing group work. Political barriers pertain to resistance from parents, unresolved conflicts among teachers, and resource limitations. Cultural barriers are associated with teachers' beliefs, values, and dedication to preparing students for the next educational level. Several researchers emphasize the importance of teacher beliefs in implementing new methods in the classroom [7]. Furthermore, professional development should target these beliefs as one of its goals [8].

Teaching experience is related to success in implementing PBL as a new teaching approach, particularly in the ability to manage projects and result achieved [9]. Level of teachers' experience is one of the predictors for teachers in selecting the learning approach (traditional or PBL approach) because it relates to teachers' beliefs [10]. Teacher beliefs refer to the individual thoughts and attitudes that teachers hold about various aspects of teaching and learning. These beliefs are shaped by teachers' experiences, training, cultural background, and personal philosophy of education.

The analysis of teacher beliefs can be captured from teachers' sense of efficacy because both are related to psychological constructs that influence the mindset and actions of individuals in their professional role [11]. Teachers' efficacy refers to teachers' beliefs in their ability to positively influence student learning and behavior [12]. It is the confidence and belief that teachers have in their instructional capabilities to promote student growth and success. Teachers with high levels of efficacy believe they can effectively manage student engagement, classroom management, and instructional strategies [13].

2. LITERATURE REVIEW

2.1. Project Based Learning (PBL)

Project-Based Learning (PBL) is an educational approach that focuses on students engaging in real-world, complex problem-solving activities. PBL is often equated with inquiry learning, problem-based learning and experiential learning. The similarity lies in the specific context, learners are actively involved in the learning process, and achieving learning objectives through the interaction process of sharing knowledge and understanding [1]. PBL is different from inquiry learning, because PBL facilitates learners to ask authentic questions and problems in real practice to provide meaningful learning experiences [14]. Meanwhile, inquiry-based learning has a broader concept, because inquiry-based learning aims to help learners understand learning concepts and social frameworks using the investigation process [15]. The difference between PBL and problem-based learning lies in the emphasis of the learning aspect. Problem-based learning emphasizes the learning process, while PBL emphasizes the process and product aspects [16]. PBL is also similar to experiential learning which emphasize on the process of learning, not the outcome [17]. Experiential learning theory is based on learning that emphasizes the formation of experiences. Ideas or concepts in experiential learning are derived from and continuously modified by experience, rather than on the utilization of the outcome. This is different from PBL which emphasizes on the collaborative learning process to contribute from sharing results and elements of reflection of active learning experiences [18]. Learners achieve learning objectives through a collaborative process involving projects, later learners will construct and present the final product by responding to the questions given.

2.2. Teachers' Efficacy

Teachers' efficacy first emerged in 1976 when the RAND organization added two questionnaire items that led to the emergence of the concept of teachers' efficacy [19]. Teachers' Efficacy is important characteristic to evaluate teacher capabilities in considering possible desired outcomes of student engagement learning and performance [20]. Teachers' efficacy includes three dimensions: efficacy for student engagement, efficacy for classroom management, and efficacy for instructional strategies [13]. Efficacy for student engagement refers to the belief and confidence that teachers have in their ability to effectively engage and motivate their students in the learning process. Efficacy for classroom management refers to the belief and confidence that teachers have in their ability to establish and maintain a well-managed and orderly classroom environment. Efficacy for instructional strategies refers to the belief and confidence that teachers have in their ability to effectively implement a wide range of teaching methods and approaches to facilitate student learning and understanding.

2.3. Teachers' Attitude toward PBL

Attitudes towards PBL play a crucial role in its successful implementation. Attitudes consist of three key components: affective, cognitive, and behavioral factors [21]. The affective component involves individuals' emotional responses towards an attitude object, leading to extensive research in this area. Teachers' attitude

relies on emotional experiences and preferences, reflecting an individual's likes or dislikes towards the object. It is essential to note that the affective component should not be solely assessed based on beliefs, as emotions and cognition are intertwined. In the context of PBL, teachers' positive or negative attitudes towards PBL can significantly impact their learning strategies [22]. Teachers' attitudes refer to their overall evaluations, feelings, and beliefs towards various aspects of their profession, the educational context, students, and teaching practices and will impact on teachers' ability to use new approaches [23]. Change in teachers' attitudes could be used as evidence of the influence on teaching and learning that teachers have experienced [24].

3. THEORETICAL FRAMEWORK

In a cross-site analysis, the successful of implementation new approach have several barriers and dilemmas and grouped into three dimensions: technical, political and cultural [6]. The technical dimension included limited ability to teach constructively, pre-existing commitments (e.g., to textbooks), assessment challenges, difficulties in group work, teacher and student role challenges and inadequate in-service education. Political dimensions include limited in-service education (e.g., not continuous for several years), parental resistance, unresolved conflicts among teachers, lack of resources, and different judgments about fairness and equity. The cultural dimension perhaps the most important because beliefs and values are so important-includes issues of textbooks, views on assessment, and the ethic of "preparation", i.e., the overriding commitment to "covering" because of the need to prepare students for the next level of schooling. The three dimensions of described by Anderson will be the theoretical framework in this study to identify teachers' readiness to adopting PBL as a new approach (Fig. 1). There are three scales in the technical dimension that relate to teacher limitations in teaching constructively: knowledge dependence, motivation, and classroom management. Political dimension which relates to teacher limitations caused by lack of support in implementing new approaches: resources, and system restrictions. The cultural dimension relates to teachers' beliefs and values which are analyzed through teachers' efficacy.

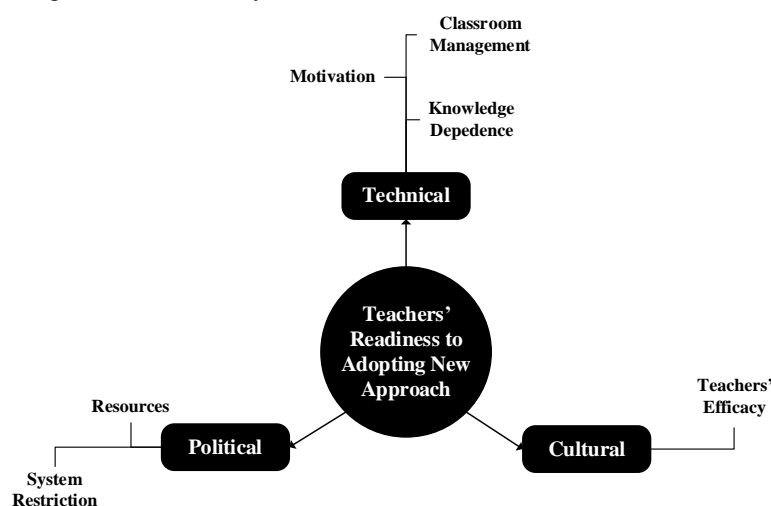


Figure 1. Theoretical framework to identify teachers' readiness to adopting new approach

4. RESEARCH METHOD

4.1 Research design

We employed a correlational descriptive design using survey studies [25]. This approach is ex-post facto methodology because we did not manipulate the subject of investigation, but focused on identifying relationships between variables [26].

4.2 Participants

The participants are made up of a set of primary teacher education who had participated in collaborative work projects that made use of learning innovation by the 2022/2023 academic year at various primary schools in Yogyakarta, Indonesia. A total of 109 primary teachers participated and they are distributed to 22 Male (20.2%) and 87 Female (79.8%). Most of these teachers come from nationally accredited Grade A schools (67.0%). The mean age of the participants was 37 and 72.5% of teachers have more than 9 years of teaching experience in primary education. Detailed information about the participants is summarized in Table 1.

Table 1. Description of study participants

	Gender		
	M	W	
N	22	87	
% of Total	20,2%	79,8%	
	National Accreditation Grade		
	A	B	
N	73	36	
% of Total	67,0%	33,0%	
	Teachers' Teaching Experience (in years)		
	< 8	9-15	> 16
N	30	53	26
% of Total	27,5%	48,6%	23,9%

4.3 Data collection

Teachers' Efficacy data was collected using the teachers' efficacy scale short form. The scale consists of 12 questions designed to measure efficacy for student engagement (items: 2, 3, 4, and 11), efficacy for classroom management (items: 1, 6, 7, 8) and efficacy for instructional strategies (items: 5, 9, 10, 12) [13]. Each item consists of a 9-point Likert scale that describes teachers' organizing in different situations. In our data, we found that the internal consistency was acceptable with range of Cronbach's Alpha from .704 to .816. We also calculated mean inter-item correlation in each subscale with range from .438 to .513.

Table 2. Factor Loading and Cronbach's Alpha for Teachers' Efficacy Scale (N=204)

Dimension	Items/Description	Cronbach's Alpha	Mean inter-item correlation
Student Engagement	How much can you do to get students to believe they can do well in schoolwork?	.704	.479
	How much can you do to help your students value learning?		
	How much can you do to motivate students who show low interest in schoolwork?		
	How much can you assist families in helping their children do well in school?		
Instructional Strategies	To what extent can you use a variety of assessment strategies?	.816	.513
	To what extent can you provide an alternative explanation for example		
	To what extent can you craft good questions for your students?		
	How well can you implement alternative strategies in your classroom?		
Classroom management	How much can you do to control disruptive behavior in the classroom?	.734	.438
	How much can you do to get children to follow classroom rules?		
	How much can you do to calm a student who is disruptive or noisy?		
	How well can you establish a classroom management system with each group of students?		

As shown in Figure 2, teachers' attitude was used to analyze teachers' readiness in the technical and political dimensions. The instrument used was the Teachers' Attitude toward PBL scale which was modified from the instrument in PRIMAS project [27]. The scale consists of 17 items where teachers are asked to respond to each statement with criteria of strongly agree, agree, disagree and strongly disagree. We also added the Routine use of PBL subscale to measure how often teachers use PBL. In our data, we found that the internal consistency of the items is acceptable with range of Cronbach's Alpha from .611 to .851. The mean inter-item correlation analysis had variation from .376 to .418. The results of this analysis can be said to have met the criteria where the recommended mean inter item correlation is in the range of 0.2 to 0.4 and the Cronbach's Alpha value is greater than 0.5 [28].

Table 3. Subscale of Teachers' Attitude toward PBL Scale with internal consistency measurement (N=204)

Subscale	Items/Description	Cronbach's Alpha	Mean inter-item correlation
Routine use of PBL	I already use PBL a great deal I regularly do projects with my students using PBL. PBL is part of my daily teaching.	-	-
Knowledge Dependence	Successful PBL requires students to have extensive content knowledge PBL is not effective with lower-achieving students	.611	.418
Motivation	PBL is well suited to overcome problems with students' motivation PBL is well suited to approach students' learning problems	.722	.397
Resources	I do not have sufficient resources such as computers and laboratory I do not have access to any adequate professional development programs involving PBL	.687	.413
Classroom Management	I do not have adequate teaching materials I think that group work is difficult to manage I worry about students' discipline being more difficult in PBL lessons I do not feel confident with PBL. I worry about my students getting lost and frustrated in their learning	.851	.376
System Restriction	My students have to take assessments that do not reward PBL The number of students in my classes is too big for PBL to be effective The curriculum does not encourage PBL There is not enough time in the curriculum	.723	.361

4.4 Data analysis

First, we used descriptive statistics on each item, including the mean, standard deviation, and percentages based on response categories, as well as dimensions of the questionnaire for the total participants. Q-Q plots were used to assess the normality of the data distributions visually which revealed that the data for the teachers' efficacy and teachers' attitude toward PBL subscales. The normal distribution was corrected by the Kolmogorov-Smirnov test with the Lilliefors. For comparing group means, we used t-tests with equal variance assumptions. In cases where the assumption of equal variances was violated, we used Welch's t-test to establish statistical differences. Additionally, when dealing with significantly different group sizes (1.5-fold difference), nonparametric Mann Whitney U test was preferred. To determine statistical significance, we set the threshold at $p < .05$ for all tests. The data were analyzed with SPSS 20 statistics package.

5. RESULT

5.1 The evaluation teachers' efficacy and teachers' attitude toward PBL

The results of teachers' efficacy and teachers' attitude toward PBL on each subscale are shown in Table 4. The mean of teachers' efficacy is 5.03 and teachers' attitude toward PBL is 2.89.

Table 4. Descriptive statistic for the Teachers' efficacy and teachers' attitude toward PBL

Scale	Mean (Scale from 1 to 9)	Range	SD
1. Teachers' Efficacy	5.03	3.08-7.58	1.14
1.1. Student Engagement	5.21	1.75-8.25	1.50
1.2. Instructional Strategies	4.88	1.50-8.20	1.52
1.3. Classroom management	5.01	1.75-8.75	1.42
Scale	Mean (Scale from 1 to 4)	Range	SD
2. Teachers' Attitude toward PBL	2.89	2.18-3.75	.26
2.1. Knowledge Dependence	2.54	1.50-4.00	.41
2.2. Motivation	3.20	2.50-4.00	.41
2.3. Resources	2.70	1.00-4.00	.57
2.4. Classroom Management	3.10	2.00-4.00	.44
2.5. System Restriction	3.00	2.00-4.00	.36

5.2 Relationship between level of PBL use and teachers' attitude toward PBL

The level of PBL use is differentiated based on the questionnaire results on the routine of use PBL subscale (Table 3). There were three items asked, namely "I already use PBL a great deal", "I regularly do projects with my students using PBL", and "PBL is part of my daily teaching". Since each item contains 4-point scale, the mean of the three items is grouped into "No or every little use" if it has lower mean than 2.5 and "somewhat or high use" if it has higher mean than 2.5. The grouping results found 47 teachers in the "No or very little use" group and 62 teachers in the "somewhat or high use" group. This resulted in approximately equally sized groups and the data of all subscales were normally distributed based on the results of Kolmogorov-Smirnov and corrected by Lilliefors ($p < .005$). Independent samples t-test was used to test for differences in the 5 subscales among two groups of teachers. The t-test results reveal that teachers who often or always use PBL and rarely or never use PBL have a significant difference $t(107) = 8.600$, $p = .000$, Cohen's $d = 1.701$. These differences on each subscale are significant except for subscale of knowledge dependence $t(107) = -1.971$, $p = .058$, and system restriction $t(107) = 1.559$, $p = .122$. We also calculated Cohen's d to display the effect size of each subscale that showed significant differences using mean and standard deviation data as shown in Table 5.

Table 5. Teachers' attitude toward PBL among teachers who have used PBL in the classroom

Subscale	N	Mean	t value	p	Cohen's d
Knowledge Dependence					
No or every little use	47	2.63			
Somewhat or high use	62	2.48	-1.917	.058	-
Motivation*					
No or every little use	47	3.04			
Somewhat or high use	62	3.32	3.749	.000	.759
Resources*					
No or every little use	47	2.43			
Somewhat or high use	62	2.90	4.647	.000	.902
Classroom Management*					
No or every little use	47	2.95			
Somewhat or high use	62	3.21	3.183	.002	.616
System Restriction					
No or every little use	47	2.93			
Somewhat or high use	62	3.04	1.559	.122	-

*Differences between the groups are significant ($p < .05$).

5.3 Relationship between level of PBL use and teachers' efficacy

The method of analyzing the relationship between level of PBL use and teachers' efficacy uses the same method as that used in analyzing level of PBL use. The grouping results have approximately the same size, but the data results on each subscale are not normally distributed based on Kolmogorov-Smirnov and corrected by Lilliefors ($p > .005$). Due to the lack of normality, in the inferential analysis nonparametric tests were used. Mann Whitney U test was used to identify significant differences between level of PBL use and teachers' efficacy. The test results reveal that there is significant difference between teachers who often or always use PBL and rarely or never use PBL $t(107) = 8.102$, $p = .000$, Cohen's $d = 2.541$. The data in table 6 shows that in all subscales of teachers' efficacy there are significant differences ($p < .05$). Cohen's d data was used to describe the effect size on each subscale.

Table 6. Teachers' efficacy among teachers who have used PBL in the classroom

Subscale	N	Mean	U	Z	p	Cohen's d
Student Engagement*						
No or every little use	47	4.16				
Somewhat or high use	62	6.01	400.500	6.473	.000	1.553
Classroom Management*						
No or every little use	47	3.80				
Somewhat or high use	62	5.69	391.000	6.533	.000	1.580
Instructional Strategies*						
No or every little use	47	4.06				
Somewhat or high use	62	5.74	438.000	6.245	.000	1.453

*Differences between the groups are significant ($p < 0.05$).

5.4 Relationship between level of teachers' efficacy and teachers' attitude

Teachers' efficacy data was obtained based on the results of analyzing the teachers' efficacy scale which consists of a 9-point scale. Levels of teachers' efficacy were differentiated using the median split method. The median of teachers' efficacy is 5.17, hence the grouping based on the distribution of the median data. Teachers who had a mean of less than 5.08 were grouped into "low teachers' efficacy" and teachers who had a mean of more than 5.25 were grouped into "high teachers' efficacy". The sample sizes of the median split results had relatively similar sample sizes and the Kolmogorov-Smirnov results with verification from Lilliefors revealed that the data were normally distributed ($p > .05$). Therefore, an independent sample t-test was prepared to test for significant differences between teachers who have low and high teachers' efficacy. Based on the results of the independent sample t-test revealed that there is a significant difference in teachers' attitude toward PBL between low teachers' efficacy and high teachers' efficacy $t(104)=5.784$, $p=.000$, Cohen's $d=1.125$. The data of t-test results to see the differences in each subscale of teachers' attitude toward PBL are shown in Table 7. The results of independent sample t-test on each subscale show that there is a significant difference in teachers' attitude toward PBL between teachers who have low and high teachers' efficacy except on the subscale knowledge dependence $t(104)=-1.666$, $p=.099$. In each subscale of teachers' attitude, we also calculated Cohen's d to see the effect size of each subscale that has a significant difference.

Table 7. Teachers' attitude toward PBL among teachers who have low and high teachers' efficacy

Subscale	N	Mean	t value	p	Cohen's d
Knowledge Dependence					
Low teacher efficacy	52	2.62			
High teacher efficacy	54	2.48	-1.666	.099	-
Motivation*					
Low teacher efficacy	52	3.10			
High teacher efficacy	54	3.30	2.604	.011	.508
Resources*					
Low teacher efficacy	52	2.48			
High teacher efficacy	54	2.89	3.999	.000	.776
Classroom Management*					
Low teacher efficacy	52	3.00			
High teacher efficacy	54	3.20	2.332	.022	.453
System Restriction*					
Low teacher efficacy	52	2.92			
High teacher efficacy	54	3.06	2.066	.041	.402

6. DISCUSSION

The Indonesian government has set out to reform education with the jargon "kurikulum merdeka" or "freedom to learn". Starting in 2019, the reform is not only on the education management and financing system, but also covers the curriculum and learning implementation. In primary education, teachers are given an allocation of learning time as much as 20% of the total learning time to implement PBL. After the policy was established, we identified that there was a need to identify the readiness of teachers in using PBL.

6.1 Teachers' readiness to implement PBL based on teachers' attitude toward PBL

Our questionnaire analysis found that out of 109 primary teachers, 47 teachers were categorized in the "No or very little use" group and 62 teachers in the "somewhat or high use" group. The results found that 57% of teachers have routinely implemented PBL. Teachers' Attitude of implementing PBL is related to teachers' attitude towards PBL, especially on the subscale of motivation, resources, and classroom management. This finding is similar to previous research which revealed that teachers' attitudes have a positive relationship with the PBL use [29]. The implementation of PBL needs habituation not only for teachers but also for students because PBL is an approach with in-depth investigation by producing meaningful products [1]. The learning atmosphere will be different from traditional learning, so the roles of teachers and students will be different.

We did not find significant differences in the subscale of knowledge dependence and system restriction, which indicates that practical experience is not enough to overcome all restrictions. It can be understood because PBL is an approach that teachers are familiar with and has continuously been added to teacher training. Teachers believe that successful PBL not requires students to have extensive content knowledge or PBL will effective with low-achieving students. In addition, the implementation of the new curriculum provides time allocation of 20% of the total learning time. This policy can help teachers to reduce system restrictions that have been considered a limitation in the use of PBL [30]. In the future, efforts that need to be made to improve teacher readiness in using PBL are paying more attention to increasing motivation, resources, and classroom management. Increasing the subscale can be done by providing PBL implementation guidelines at each level

of education that can be adapted and modified by teachers. In addition, providing opportunities for sharing sessions in the application of PBL in a community can also help teachers improve the subscale [31]. Each teacher can motivate each other, and share their experiences, for example in developing project guidelines, students' group work management, managing student discipline, or anticipating students who are frustrated in learning.

6.2 Teachers' readiness to implement PBL based on teachers' efficacy

Our study found that there are differences in the routine use of PBL on each subscale of teachers' efficacy: student engagement, classroom management, and instructional strategies. This finding suggests that the use of PBL will have an impact on teachers' efficacy. Similar to previous research which found that the positive associations found between PBL and teacher self-efficacy indicates that instructional practice is not only an outcome of teacher self-efficacy, but also causes changes in teacher self-efficacy [32]. In particular, the teacher self-efficacy determines the use of constructivist instructional practices [33].

Relationship between routine of PBL use and teachers' efficacy is not only for in-service teachers, but also for pre-service teachers. Numerous researchers, including Manowaluilou and Reeve have examined personal efficacy in undergraduate students and discovered that during the fourth year of their program, when they began teaching classes, there was a steady rise in their sense of efficacy [34]. This finding is further supported by Bilgin, et. al., who demonstrated that practicing teachers who pursued additional graduate courses in education displayed higher levels of personal efficacy in science teaching [35]. Similarly, in a study exploring the impact of PBL on undergraduate students' self-efficacy beliefs and achievement which observed a greater increase compared to those who were taught and learned science through traditional methods [35].

6.3 The impact level of teachers' efficacy to teachers' attitude toward PBL

We found that teachers who have higher teachers' sense efficacy have a more positive attitude. The highest influence is on resources when using PBL. Teachers who have high efficacy have a greater belief that PBL can be used even with limited school resources such as computers, laboratories, or professional development limitation. They can develop new ideas to cover the limitations of school resources. This is in line with M. Tschannen-Moran and Hoy who state that a higher sense of teacher efficacy will provide opportunities to become teachers who are more open to new ideas and more willing to implement new approaches [13]. This finding supports previous findings that teachers' efficacy is a determinant factor in a training session conducted in the use of new approaches [27]. Furthermore, within the group of teachers who receive training in Mastery Learning, those who had higher levels of self-efficacy tended to perceive mastery learning as more significant, better aligned with their current teaching methods, and less challenging to implement compared to teachers with lower self-efficacy [36].

However, on the knowledge dependence subscale, there was no significant difference among teachers who have low and high teachers' efficacy to teachers' attitude toward PBL. Although the direction of the relationship is not clear, teachers with low and high teachers' efficacy believe that successful PBL requires students to have extensive content knowledge and is not effective for low-achieving students. This finding differs from the previous finding that teachers' efficacy is related to teachers' attitude toward Inquiry Based Learning (IBL) on the knowledge dependence subscale [27]. This is possible because PBL is different from IBL. PBL facilitates learners to ask authentic questions and problems in real practice to provide meaningful learning experiences [14]. Meanwhile, IBL encompasses a more extensive concept, seeking to aid learners in comprehending educational concepts and societal structures through the process of investigation [15].

7. CONCLUSION

Overall, we conclude that teachers' readiness to implement PBL is influenced by teachers' efficacy and attitude toward PBL. The most dominant subscale of teachers' attitude toward PBL is motivation, resources, and classroom management. Meanwhile, the level of PBL use is not influenced by knowledge dependence and system restriction. The level of PBL use is also influenced by teachers' efficacy on all subscales: efficacy for student engagement, classroom management and instructional strategies. This indicates that teachers who possess a higher sense of efficacy exhibit greater confidence in their abilities for classroom management, and this extends to their proficiency in managing classrooms during PBL lessons as well. Our study also found that the level of teachers' efficacy has a positive effect on teachers' attitude toward PBL on all subscales, except on the knowledge dependence subscale.

The implications of this study can provide an overview of the readiness of in-service primary teachers in an effort to encourage teachers to use PBL. Future professional development efforts can concentrate on practical training, including allocating more time for verbal persuasion, such as providing information about effective teaching strategies. Additionally, substitute experiences can be incorporated, such as conducting strategy demonstrations with local students, and protected mastery experiences can be encouraged through planning and practice sessions with colleagues. However, there are some limitations to our study. Firstly, our

study did not measure the pre-post training sessions by including a control group, and therefore, we do not know if the same results would have emerged in a theoretical training. Secondly, the sample that participated in the training program was very small, hence the need for future studies that confirm our findings.

CONFLICT OF INTEREST

All authors declare that they have no conflicts of interest.

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Pengusul:

Yusinta Dwi Ariyani, M.Pd. (NIDN. 0510078902)

Prof. Dr. Insih Wilujeng, M.Pd. (NIDN. 0002126703)

Dhina Puspasari Wijaya, M.Kom. (NIDN. 056019202)

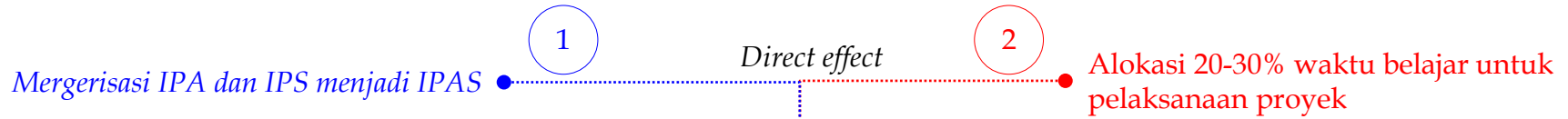
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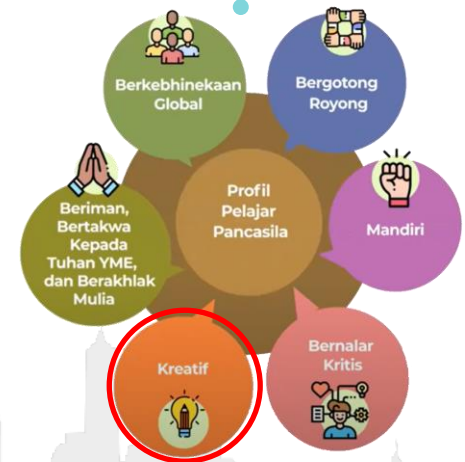
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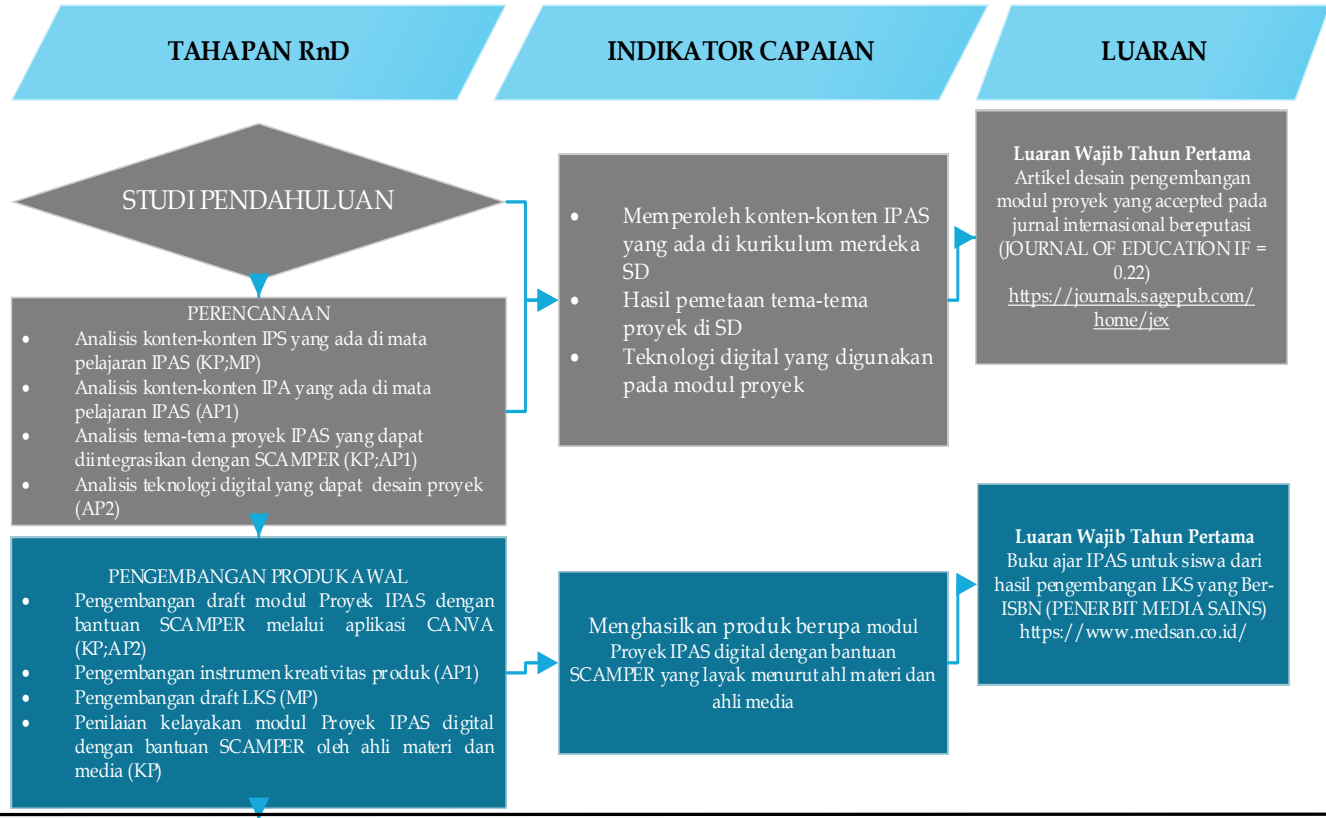


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Dear Prof/Dr/Mr/Mrs: Mrs Yusinta dwi ariyani,

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KESIMPULAN, SARAN DAN REKOMENDASI

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- ❖ Kesiapan guru untuk mengimplementasikan PBL dipengaruhi oleh efikasi dan sikap guru terhadap PBL
- ❖ Pengembangan panduan proyek terdiri dari lima tema diantaranya adalah lingkungan buatan, diorama siklus air, peta keanekaragaman, sistem tata surya dan ekonomi kreatif.
- ❖ Hasil judgment ahli menyatakan bahwa buku panduan layak untuk digunakan pada uji berikutnya

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- ❖ Proyek perlu mengintegrasikan teknologi supaya meningkatkan visibilitas panduan proyek dan penyebarluasan
- ❖ Setiap lembar kerja proyek perlu dipisahkan supaya membuat guru mudah untuk menerapkannya



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101

Primary Teachers' Readiness to use Project: Investigate Teachers' efficacy and attitude toward Project-Based Learning (PBL)

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ABSTRACT (10 PT)

The purpose of our study was to investigate primary teachers' readiness to use PBL using teachers' efficacy and teachers' attitude toward PBL. A correlational descriptive design was set as the research design on 109 primary teachers from various schools who had participated in collaborative work projects in 2023. To collect data, teachers' efficacy and teachers' attitude scale were used as instrument. The results found that the level of use of PBL was influenced by teachers' attitude toward PBL for each subscale except on the knowledge dependence and system restriction. We also found that the level of use of PBL has a positive relationship with each subscale of teachers' efficacy and the level of teachers' efficacy is influenced by teachers' attitude toward PBL for each subscale, except for the knowledge dependence. Implications of this study are expected to be considerations for professional development that focus on more concrete practical training.

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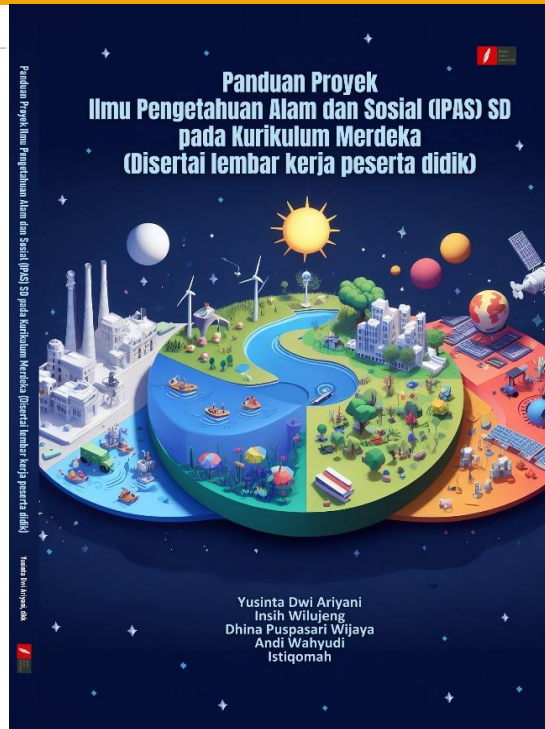
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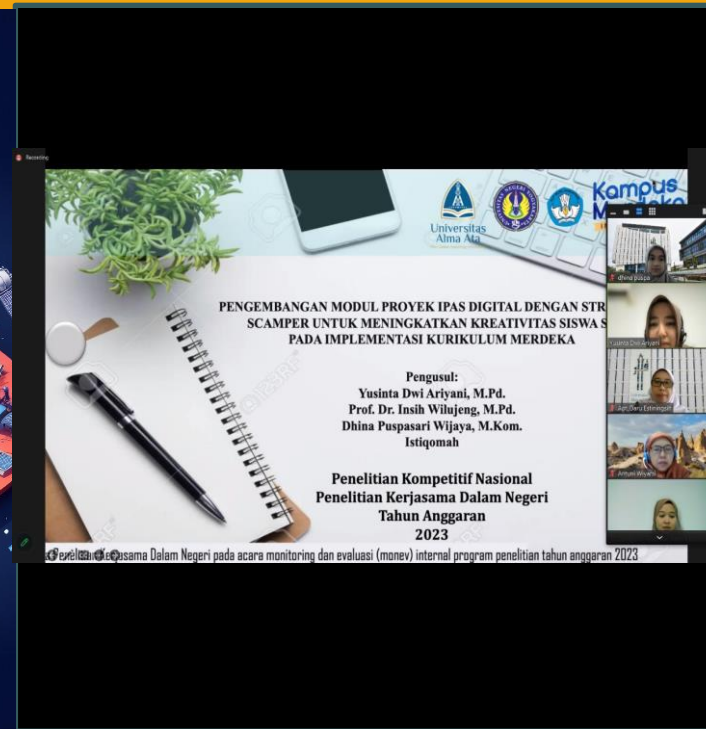
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