KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET, DAN TEKNOLOGI
**DIREKTORAT JENDERAL PENDIDIKAN TINGGI,
RISET, DAN TEKNOLOGI**
Jalan Jenderal Sudirman, Senayan, Jakarta 10270
Telepon (021) 57946104, Pusat Panggilan ULT DIKTI 126
Laman www.dikti.kemdikbud.go.id

Nomor : 0267/E5/AK.04/2022 28 April 2022
Lampiran : 2 berkas
Hal : Pengumuman Penerima Pendanaan Penelitian Program Kompetitif Nasional dan Penugasan di Perguruan Tinggi Tahun Anggaran 2022 Tahap Pertama

Yth. 1. Kepala Lembaga Layanan Pendidikan Tinggi Wilayah I s/d XVI
2. Ketua LP/LPM/LPPM Perguruan Tinggi di lingkungan Ditjen Diktiristek

Berdasarkan Keputusan Kuasa Pengguna Anggaran Direktorat Riset, Teknologi, dan Pengabdian Kepada Masyarakat Nomor 033/E5/PG.02.00/2022 tanggal 27 April 2022 tentang Penerima Program Bantuan Operasional Perguruan Tinggi Negeri Program Penelitian Kompetitif Nasional dan Penugasan di Perguruan Tinggi Tahun Anggaran 2022 Tahap Pertama, bersama ini kami sampaikan **daftar nama penerima pendanaan penelitian program kompetitif nasional dan penugasan untuk skema penelitian dasar kemitraan tahun anggaran 2022 tahap pertama** (Lampiran I), sedangkan program desentralisasi akan diumumkan kemudian.

Berkenaan dengan hal tersebut, Direktorat Riset, Teknologi, dan Pengabdian kepada Masyarakat (DRTPM) mengucapkan selamat kepada penerima pendanaan penelitian pada tahap pertama. DRTPM juga mengucapkan terima kasih kepada pengusul yang telah berpartisipasi. Selanjutnya, kami mohon bantuan Bapak/Ibu untuk menyampaikan informasi pengumuman ini kepada nama-nama yang tercantum pada lampiran penerima pendanaan penelitian program kompetitif nasional dan penugasan di perguruan tinggi tahun anggaran 2022 tahap pertama.

Perlu kami sampaikan bahwa mekanisme penyaluran dana akan dilakukan melalui kontrak. Berkaitan dengan hal ini, kami sampaikan beberapa hal sebagai berikut:

1. Kontrak dilakukan secara berjenjang. Untuk Perguruan Tinggi Negeri (PTN), kontrak dilakukan antara DRTPM dengan Ketua LP/LPM/LPPM. Adapun untuk Perguruan Tinggi Swasta (PTS), kontrak dilakukan melalui Kepala Lembaga Layanan Pendidikan Tinggi (LLDIKTI) masing- masing wilayah;
2. Pencairan dana penelitian dilaksanakan dalam 2 (dua) tahap;
3. Hal-hal lain yang terkait dengan penandatanganan kontrak, pencairan dana, dan pelaksanaan penelitian akan diinformasikan lebih lanjut melalui laman: http://simlitabmas.kemdikbud.go.id

Berkaitan dengan data yang diperlukan untuk penandatanganan kontrak, bersama ini kami lampirkan daftar isian borang kontrak (Lampiran II). Kami mohon perkenannya untuk dapat mengisi daftar isian tersebut dan mengunggahnya melalui link http://ringkas.kemdikbud.go.id/kontrakpenelitian22 paling lambat tanggal 13 Mei 2022. Untuk PTS tidak perlu mengisi daftar isian borang kontrak karena kontrak akan dilakukan dengan LLDIKTI masing-masing wilayah.

Demikian kami sampaikan. Atas perhatian dan kerja sama yang baik, kami ucapkan terima kasih.

plt. Direktur Riset, Teknologi, dan
Pengabdian Kepada Masyarakat

Teuku Faisal Fathani
NIP 197505261999031002

Tembusan:
plt. Direktur Jenderal Pendidikan Tinggi,
Riset, dan Teknologi

2549	LLDIKTI X	Universitas Dharmas Indonesia	1017109501	WIWIK OKTA SUSILAWATI	Pengembangan Buku Ajar Digital PPKn di SD Terintegrasi Profil Pelajar Pancasila untuk Mahasiswa Berbantu Software Anyflip dalam Mendukung Kurikulum Prototipe	PDP
2550	LLDIKTI X	Universitas Dinamika Bangsa	1006109301	LIES ARYANI	Analisis dan Evaluasi Sistem Informasi Monitoring PAPS (Pasien Pulang Atas Permintaan Sendiri) untuk Pasien Terkonfirmasi Covid-19 menggunakan Metode SAW	PDP
2551	LLDIKTI X	Universitas Dinamika Bangsa	1031089401	MIRA GUSTIANA PANGESTU	Pengaruh Digitalisasi Marketing pada Kinerja Keuangan dan Kinerja Pasar UMKM di Kabupaten Muaro Jambi	PDP
2552	LLDIKTI X	Universitas Dinamika Bangsa	1031019401	MOCHAMMAD ARIEF HERMAWAN SUTOYO	Rancang Bangun Aplikasi Informasi E-Kios Untuk Pelayanan Publik di Kantor Desa Baru Kabupaten Muaro Jambi Menggunakan Metode Human Computer Interaction	PDP
2553	LLDIKTI X	Universitas Dinamika Bangsa	1019018602	ROBY SETIAWAN	Penerapan sistem kontrol dan monitoring kelembapan pada kumbung jamur tiram berbasis IoT menggunakan metode fuzzy logic	PDP
2554	LLDIKTI X	Universitas Dinamika Bangsa	1005067902	XAVERIUS SIKA	Tingkat Kebergunaan aplikasi Angso Duo Online (ADO) sebagai media belanja online masyarakat kota jambi menggunakan Metode Usability Testing	PDP
2555	LLDIKTI X	Universitas Dinamika Bangsa	1021088102	YOSSINOMITA	Analisis hubungan antara pembangunan dan pertumbuhan ekonomi terhadap ketimpangan dan lingkungan	PDP
2556	LLDIKTI X	Universitas Ekasakti	0022066801	I KETUT BUDARAGA	Pemanfaatan Belimbing Wuluh (Averrhoa bilimbi L.) dalam Pembuatan Keju Lunak (Soft Cheese) dengan Metode Asam	PDKN
2557	LLDIKTI X	Universitas Fort De Kock	1028049303	ABDI ISWAHYUDI YASRIL	Pencegahan dan Pengendalian Hipertensi di Kota Bukittinggi (Analisis Perilaku)	PDP
2558	LLDIKTI X	Universitas Fort De Kock	1028128801	HARRY ADE SAPUTRA	Sintesis, Karakterisasi Enkapsulasi Minyak Sereh Wangi-Gambir Pada Kitosan Nanogel, Serta Uji Aktifitas Anti-mikroba dan Anti-inflamasinya pada Tikus Putih Jantan Galur Wistar (Rattus norvegicus L.)	PKPT
2559	LLDIKTI X	Universitas Fort De Kock	1004069102	MELADINA	Effektivitas Aplikasi Adroid ‘Tell Me What Is it’ untuk Meningkatkan Pengusaan Kosakata Siswa Sekolah Dasar tentang Anatomi Tubuh Manusia	PDP
2560	LLDIKTI X	Universitas Fort De Kock	1007068801	RAHMIWATI	Evaluasi Domain Kualitas hidup dalam bentuk Acceptence Of Illness pada pasien Kanker Payudara : Mix Methods Research	PDP
2561	LLDIKTI X	Universitas Ibnu Sina	1028088702	AGUS SURYADI	Application of the Barcode Scanner Library Zxing Method on Warehouse Applications at PT NITA Logistics	PDP
2562	LLDIKTI X	Universitas Ibnu Sina	1005127403	ELMINALIYA SANDRA, SE, M.AK	ANALISIS IMPLEMENTASI PENYAJIAN LAPORAN KEUANGAN DAN PELAPORAN PAJAK BERBASIS APLIKASI PADACV AFIQ INTAN PERWIRA	PDP

2563	LLDIKTI X	Universitas Ibnu Sina	1030059601	MEYLIA VIVI PUTRI	Comparison of acceptance of technology to improve the community's economy on the community's facebook group and whatsapp group using the TAM and DeLone&Mclean methods	PDP
2564	LLDIKTI X	Universitas Ibnu Sina	1019089201	MULYADI	Perancangan Modul Ajar Praktikum Pengantar Akuntansi Berbasis Kompetensi (Competency Based Learning)	PDP
2565	LLDIKTI X	Universitas Islam Indragiri	1001129001	SYAFRIZAL	E-learning implementation in the post Covid-19 pandemic: Lecturer’s and students’ perception	PDP
2566	LLDIKTI X	Universitas Islam Riau	1007016401	ABD THALIB	Perlindungan Hukum Terhadap Hak Konsumen Dalam Hal Pemesanan Unit Rumah Kepada Developer Di Kota Pekanbaru (Studi terhadap PT. Pratama Hutama Jaya)	PPS-PTM
2567	LLDIKTI X	Universitas Islam Riau	1007016401	ABD THALIB	PERLINDUNGAN HUKUM TERHADAP PRODUK KARYA SENI KAIN SONGKET DAN TENUN SIAK DILIHAT DARI DOKTRIN TRADITIONAL KNOWLEDGE	PPS-PTM
2568	LLDIKTI X	Universitas Islam Riau	1025058102	ANNISA MARDATILLAH	STRATEGI BERSAING IKM KERAJINAN ANYAMAN LIMBAH LIDI KELAPA SAWIT BERBASIS INDIGENOUS PRODUCT CREATIVITY DI ROKAN HILIR, PROVINSI RIAU	PDKN
2569	LLDIKTI X	Universitas Islam Riau	1007048303	DESI APRIANI	TANGGUNG JAWAB JASA PENGIRIMAN BARANG TERHADAP BARANG YANG RUSAK AKIBAT KELALAIAN DARI PEKERJA BERDASARKAN UNDANG-UNDANG NOMOR 8 TAHUN 1999 TENTANG PERLINDUNGAN KONSUMEN	PPS-PTM
2570	LLDIKTI X	Universitas Islam Riau	1029027601	EVIZAL	SISTEM PEMANTAUAN PASIEN COVID-19 BERBASIS MOBILE MENGGUNAKAN MULTI SENSOR TEKNOLOGI INTERNET OF THINGS (IOT) DAN CLOUD COMPUTING	PTKN
2571	LLDIKTI X	Universitas Islam Riau	1007028602	HENI SUSANTI	PERTANGGUNGJAWABAN PIDANA NOODWEER EXCES PADA PUTUSAN HAKIM YANG MEMBEBASKAN TERDAKWA DARI DAKWAAN JAKSA PENUNTUT UMUM	PPS-PTM
2572	LLDIKTI X	Universitas Islam Riau	1019128801	MUHD AR. IMAM RIAUAN	Penerapan Sistem E-Planning Dalam Penyusunan Rencana Kerja Perangkat Daerah Kabupaten Rokan Hilir	PPS-PTM
2573	LLDIKTI X	Universitas Islam Riau	1019128801	MUHD AR. IMAM RIAUAN	Implementasi Program E-Procurement pada Bagian Pengadaan Barang dan Jasa Sekretariat Daerah Kabupaten Indragiri Hulu	PPS-PTM
2574	LLDIKTI X	Universitas Islam Riau	1005048602	ROSYIDI HAMZAH	Analisis Perlindungan Hukum Terhadap Keamanan Rahasia Bank Dalam Menjaga Kepentingan Data Nasabah Berdasakan Prinsip Kepercayaan Kepada Bank (Studi Kasus Putusan Mahkamah Konstitusi NO 64/PUU-X/2012 Tentang Data Nasabah Bank Dan Simpanannya Untuk Kepentingan Harta Gono Gini Dalam Perkara Perdata Perceraian)	PPS-PTM
2575	LLDIKTI X	Universitas Islam Riau	1020077102	SRI YULIANI	ROBOT EVOCE SEBAGAI UPAYA MENINGKATKAN KEMAMPUAN VOCABULARY PADA ENGLISH FOR YOUNG LEARNERS	PDKN

UNIVERSITAS ISLAM RIAU
DIREKTORAT PENELITIAN DAN PENGABDIAN MASYARAKAT

Alamat : Jalan Kaharuddin Nasution No. 113, Marpoyan, Pekanbaru, Riau, Indonesia - 28284
Telp. +62 761 674 674 Fax. +62 761 674 834 Email : dppm@uir.ac.id Website : www.dppm.uir.ac.id

KONTRAK PENELITIAN HIBAH DIKTI
Penelitian PDKN
Tahun Anggaran 2022
Nomor: 016/KONTRAKHIBAH/DPPM-UIR/2022

Pada hari ini Rabu tanggal Delapan bulan Juni tahun Dua Ribu Dua Puluh Dua, kami yang bertandatangan dibawah ini :

1. Dr. Arbi Haza Nasution, B.IT., M.IT	:	Direktur Penelitian dan Pengabdian Masyarakat, Universitas Islam Riau, dalam hal ini bertindak untuk dan atas nama Universitas Islam Riau, yang berkedudukan di Jl. Kaharuddin Nasution No. 113 P. Marpoyan, Pekanbaru, untuk selanjutnya disebut **PIHAK PERTAMA;**
2. Dr. Sri Yuliani, S.Pd., M.Pd.	:	Dosen Fakultas Ilmu Keguruan dan Ilmu Pendidikan Universitas Islam Riau, dalam hal ini bertindak sebagai pengusul dan Ketua Pelaksana Penelitian Tahun Anggaran 2022 untuk selanjutnya disebut **PIHAK KEDUA**.

PIHAK PERTAMA dan **PIHAK KEDUA**, secara bersama-sama sepakat mengikatkan diri dalam suatu Kontrak Penelitian PDKN Anggaran 2022 dengan ketentuan dan syarat-syarat sebagai berikut:

Pasal 1
Ruang Lingkup Kontrak

PIHAK PERTAMA memberi pekerjaan kepada **PIHAK KEDUA** dan **PIHAK KEDUA** menerima pekerjaan tersebut dari **PIHAK PERTAMA,** untuk melaksanakan dan menyelesaikan Penelitian PDKN Tahun Anggaran 2022 dengan judul **"Robot Evoce Sebagai Upaya Meningkatkan Kemampuan Vocabulary Pada English For Young Learners"**.

Pasal 2
Dana Penelitian

(1) Besarnya dana untuk melaksanakan penelitian dengan judul sebagaimana dimaksud pada Pasal 1 adalah sebesar **Rp. 90.000.000,- (Sembilan Puluh Juta Rupiah)** sudah termasuk pajak.

(2) Dana Penelitian sebagaimana dimaksud pada ayat (1) dibebankan pada Daftar Isian Pelaksanaan Anggaran (DIPA) Direktorat Riset dan Pengabdian Kepada Masyarakat, Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Tahun Anggaran 2022, Nomor SP DIPA-023.17.1.690523/2022, revisi ke -02 tanggal 22 April 2022.

Pasal 3
Tata Cara Pembayaran Dana Penelitian

(1) **PIHAK PERTAMA** akan membayarkan Dana Penelitian kepada **PIHAK KEDUA** secara bertahap dengan ketentuan sebagai berikut:
   a. Pembayaran sebesar 70% dari total dana Penelitian yaitu **70% X Rp. 90.000.000,- = Rp. 63.000.000,- (Enam Puluh Tiga Juta Rupiah).**
   b. Pembayaran Tahap Kedua/Terakhir sebesar 30% dari total bantuan dana kegitan yaitu **30% X Rp. 90.000.000,-= Rp. 27.000.000,-(Dua Puluh Tujuh Juta Rupiah)**, dibayarkan setelah **PIHAK KEDUA** mengisi buku catatan harian dan menggunggah ke laman *(website)* **BIMA selambat-lambatnya tanggal 16 Agustus 2022**, dokumen sebagai berikut :
      a. Surat Pernyataan Tanggung Jawab Belanja (SPTB); dan
      b. Laporan kemajuan pelaksanaan pekerjaan.

(2) Dana Penelitian sebagaimana dimaksud pada ayat (1) akan disalurkan oleh **PIHAK PERTAMA** kepada **PIHAK KEDUA** ke rekening sebagai berikut:

Nama	:	**Dr. Sri Yuliani, S.Pd., M.Pd.**
NomorRekening	:	
Nama Bank	:	**Bank Syariah Mandiri**

(3) **PIHAK PERTAMA** tidak bertanggung jawab atas keterlambatan dan/atau tidak terbayarnya sejumlah dana sebagaimana dimaksud pada ayat (1) yang disebabkan karena kesalahan **PIHAK KEDUA** dalam menyampaikan data peneliti, nama bank, nomor rekening, dan persyaratan lainnya yang tidak sesuai dengan ketentuan.

Pasal 4
Jangka Waktu

Jangka waktu pelaksanaan penelitian sebagaimana dimaksud dalam Pasal 1 sampai selesai 100%, adalah terhitung sejak **Tanggal 8 Juni 2022** dan berakhir pada **Tanggal 20 November 2022.**

Pasal 5
Target Luaran

(1) **PIHAK KEDUA** berkewajiban untuk mencapai target luaran wajib dan Luaran tambahan penelitian berupa jurnal lokal atau jurnal nasional atau sesuai dengan yang dijanjikan dalam proposal penelitian.
(2) **PIHAK KEDUA** berkewajiban untuk melaporkan perkembangan pencapaian target luaran sebagaimana dimaksud pada ayat (1) kepada **PIHAK PERTAMA.**

Pasal 6
Hak dan Kewajiban Para Pihak

(1) Hak dan Kewajiban **PIHAK PERTAMA**:
   a. **PIHAK PERTAMA** berhak untuk mendapatkan dari **PIHAK KEDUA** luaran penelitian sebagaimana dimaksud dalam Pasal 7;
   b. **PIHAK PERTAMA** berkewajiban untuk memberikan dana penelitian kepada **PIHAK KEDUA** dengan jumlah sebagaimana dimaksud dalam Pasal 2 ayat (1) dan dengan tata cara pembayaran sebagaimana dimaksud dalam Pasal 3.

(2) Hak dan Kewajiban **PIHAK KEDUA**:

a. **PIHAK KEDUA** berhak menerima dana penelitian dari **PIHAK PERTAMA** dengan jumlah sebagaimana dimaksud dalam Pasal 2 ayat (1);
b. **PIHAK KEDUA** berkewajiban menyerahkan kepada **PIHAK PERTAMA** luaran Penelitian dengan judul **"Robot Evoce Sebagai Upaya Meningkatkan Kemampuan Vocabulary Pada English For Young Learners"** dan catatan harian pelaksanaan penelitian;
c. **PIHAK KEDUA** berkewajiban untuk bertanggung jawab dalam penggunaan dana penelitian yang diterimanya sesuai dengan proposal kegiatan yang telah disetujui;
d. **PIHAK KEDUA** berkewajiban untuk menyampaikan kepada **PIHAK PERTAMA** laporan penggunaan dana sebagaimana dimaksud dalam Pasal 7.

Pasal 7
Laporan Pelaksanaan Penelitian

(1) **PIHAK KEDUA** berkewajiban untuk menyampaikan kepada **PIHAK PERTAMA** berupa laporan kemajuan dan laporan akhir mengenai luaran penelitian dan rekapitulasi penggunaan anggaran sesuai dengan jumlah dana yang diberikan oleh **PIHAK PERTAMA** yang tersusun secara sistematis sesuai pedoman yang ditentukan oleh **PIHAK PERTAMA**.
(2) **PIHAK KEDUA** berkewajiban mengunggah Surat Pernyataan Tanggung Jawab Belanja (SPTB) penelitian yang telah dilaksanakan ke BIMA paling lambat **16 Agustus 2022.**
(3) **PIHAK KEDUA** berkewajiban menyerahkan *Hardcopy* Laporan Kemajuan dan Rekapitulasi Penggunaan Anggaran 100% kepada **PIHAK PERTAMA,** paling lambat **20 November 2022.**
(4) **PIHAK KEDUA** berkewajiban mengunggah Laporan Akhir, capaian hasil, Poster, artikel ilmiah dan profil pada BIMA paling lambat **20 November 2022**.
(5) Laporan hasil Penelitian sebagaiman tersebut pada ayat (4) harus memenuhi ketentuan sebagai berikut:
   a. Bentuk/ukuran kertas A4;
   b. Di bawah bagian cover ditulis:

Dibiayai oleh:
Direktorat Riset Teknologi, dan Pengabdian kepada Masyarakat
Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi
Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi
Sesuai dengan Kontrak Penelitian
Nomor: 016/KONTRAKHIBAH/DPPM-UIR/2022

Pasal 8
Monitoring dan Evaluasi

PIHAK PERTAMA dalam rangka pengawasan akan melakukan Monitoring dan Evaluasi internal terhadap kemajuan pelaksanaan Penelitian Tahun Anggaran 2022 ini sebelum pelaksanaan Monitoring dan Evaluasi eksternal oleh Direktorat Riset dan Pengabdian Kepada Masyarakat, Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi

Pasal 9
Penilaian Luaran

1. Penilaian luaran penelitian dilakukan oleh Komite Penilai/*Reviewer* Luaran sesuai dengan ketentuan yang berlaku.
2. Apabila dalam penilaian luaran terdapat luaran tambahan yang tidak tercapai maka dana tambahan yang sudah diterima oleh peneliti harus disetorkan kembali ke kas negara.

Pasal 10
Perubahan Susunan Tim Pelaksana dan Substansi Pelaksanaan

Perubahan terhadap susunan tim pelaksana dan substansi pelaksanaan Penelitian ini dapat dibenarkan apa bila telah mendapat persetujuan tertulis dari Direktorat Riset dan Pengabdian Kepada Masyarakat, Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.

Pasal 11
Penggantian Ketua Pelaksanan

(1) Apabila **PIHAK KEDUA** selaku ketua pelaksana tidak dapat melaksanakan Penelitian ini, maka **PIHAK KEDUA** wajib mengusulkan pengganti ketua pelaksana yang merupakan salah satu anggota tim kepada **PIHAK PERTAMA**.
(2) Apabila **PIHAK KEDUA** tidak dapat melaksanakan tugas dan tidak ada pengganti ketua sebagaimana dimaksud pada ayat (1), maka **PIHAK KEDUA** harus mengembalikan dana penelitian kepada **PIHAK PERTAMA** yang selanjutnya disetor ke Kas Negara.
(3) Bukti setor sebagaimana dimaksud pada ayat (2) disimpan oleh **PIHAK PERTAMA.**

Pasal 12
Sanksi

(1) Apabila sampai dengan batas waktu yang telah ditetapkan untuk melaksanakan Penelitian ini telah berakhir, namun **PIHAK KEDUA** belum menyelesaikan tugasnya, terlambat mengirim laporan Kemajuan, dan/atau terlambat mengirim laporan akhir, maka **PIHAK KEDUA** dikenakan sanksi administratif berupa penghentian pembayaran dan tidak dapat mengajukan proposal penelitian dalam kurun waktu dua tahun berturut-turut.
(2) Apabila **PIHAK KEDUA** tidak dapat mencapai target luaran sebagaimana dimaksud dalam Pasal 5, maka kekurangan capaian target luaran tersebut akan dicatat sebagai hutang **PIHAK KEDUA** kepada **PIHAK PERTAMA** yang apabila tidak dapat dilunasi oleh **PIHAK KEDUA**, akan berdampak pada kesempatan **PIHAK KEDUA** untuk mendapatkan pendanaan penelitian atau hibah lainnya yang dikelola oleh **PIHAK PERTAMA**.

Pasal 13
Pembatalan Perjanjian

(1) Apabila dikemudian hari terhadap judul Penelitian sebagaimana dimaksud dalam Pasal 1 ditemukan adanya duplikasi dengan Penelitian lain dan/atau ditemukan adanya ketidak jujuran, itikad tidak baik, dan/atau perbuatan yang tidak sesuai dengan kaidah ilmiah dari atau dilakukan oleh **PIHAK KEDUA**, maka perjanjian Penelitian ini dinyatakan batal dan **PIHAK KEDUA** wajib mengembalikan dana penelitian yang telah diterima kepada **PIHAK PERTAMA** yang selanjutnya akan disetor ke Kas Negara.
(2) Bukti setor sebagaimana dimaksud pada ayat (1) disimpan oleh **PIHAK PERTAMA.**

Pasal 14
Pajak-Pajak

Hal-hal dan/atau segala sesuatu yang berkenaan dengan kewajiban pajak berupa PPN dan/atau PPh menjadi tanggung jawab **PIHAK KEDUA** dan harus dibayarkan oleh **PIHAK KEDUA** ke kantor pelayanan pajak setempat sesuai ketentuan yang berlaku.

Pasal 15
Peralatan dan/alat Hasil Penelitian

Hasil Pelaksanaan Penelitian ini yang berupa peralatan dan/atau alat yang dibeli dari pelaksanaan Penelitian ini adalah milik Negara yang dapat dihibahkan kepada Universitas Islam Riau sesuai dengan ketentuan peraturan perundang-undangan.

Pasal 16
Penyelesaian Sengketa

Apabila terjadi perselisihan antara **PIHAK PERTAMA** dan **PIHAK KEDUA** dalam pelaksanaan perjanjian ini akan dilakukan penyelesaian secara musyawarah dan mufakat, dan apabila tidak tercapai penyelesaian secara musyawarah dan mufakat maka penyelesaian dilakukan melalui proses hukum.

Pasal 17
Lain-lain

(1) **PIHAK KEDUA** menjamin bahwa penelitian dengan judul tersebut di atas belum pernah dibiayai dan/atau diikutsertakan pada Pendanaan Penelitian lainnya, baik yang diselenggarakan oleh instansi, lembaga, perusahaan atau yayasan, baik di dalam maupun di luar negeri.
(2) Segala sesuatu yang belum cukup diatur dalam Perjanjian ini dan dipandang perlu diatur lebih lanjut dan dilakukan perubahan oleh **PARA PIHAK**, maka perubahan-perubahannya akan diatur dalam perjanjian tambahan atau perubahan yang merupakan satu kesatuan dan bagian yang tidak terpisahkan dari Perjanjian ini.

Perjanjian ini dibuat dan ditandatangani oleh PARA PIHAK pada hari dan tanggal tersebut di atas, dibuat dalam rangkap 2 (dua) dan bermeterai cukup sesuai dengan ketentuan yang berlaku, yang masing-masing mempunyai kekuatan hukum yang sama.

PIHAK PERTAMA	PIHAK KEDUA
Dr. Arbi Haza Nasution, B.IT., M.IT	**Dr. Sri Yuliani, S.Pd., M.Pd.**
NIDN: 1023048901	NIDN: 1020077102

Mengetahui
DEKAN FAKULTAS ILMU KEGURUAN DAN ILMU PENDIDIKAN

Dr. Hj. Sri Amnah, S.Pd., M.Si.
NIDN: 0007107005

Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi
Jalan Jenderal Sudirman, Senayan, Jakarta Pusat 10270
http://simlitabmas.kemdikbud.go.id/

PROPOSAL PENELITIAN 2022

ID Proposal: 8df2c34b-78fa-4cb4-9f61-d605153e7a79
Rencana Pelaksanaan Penelitian: tahun 2022 s.d. tahun 2025

1. JUDUL PENELITIAN

ROBOT EVOCE SEBAGAI UPAYA MENINGKATKAN KEMAMPUAN VOCABULARY PADA ENGLISH FOR YOUNG LEARNERS

Bidang Fokus RIRN / Bidang Unggulan Perguruan Tinggi	Tema	Topik (jika ada)	Rumpun Bidang Ilmu
Teknologi Informasi dan Komunikasi	Pengembangan Infrastruktur TIK	Pengembangan jaringan sensor	Pendidikan Bahasa (dan Sastra) Inggris

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

2. IDENTITAS PENGUSUL

Nama, Peran	Perguruan Tinggi/ Institusi	Program Studi/ Bagian	Bidang Tugas	ID Sinta	H-Index
SRI YULIANI Ketua Pengusul	Universitas Islam Riau	Pendidikan Bahasa Inggris	1. Bertanggung jawab pada proses penelitian 2. Memeriksa dan membantu proses penelitian dari awal sampai akhir 3. Memeriksa dan pembuatan isi laporan dan kesimpulan penelitian 4. Bertanggung jawab atas hasil penelitian 5. Memeriksa analisis kebutuhan dan desain 6. Memberikan pelatihan penggunaan Robot 7. Membantu proses analisa data dan Evaluasi 8. Mengolah data menggunakan SPSS 9. Interpretasi hasil evaluasi	5981384	0
ARIE LINARTA S.Kom, M.Kom Anggota Pengusul 1	STMIK Dumai	Sistem Informasi	1. Bertanggung jawab pada proses penelitian 2. Memeriksa dan	6657926	1

			membantu proses penelititan dari awal sampai akhir 3. Memeriksa dan pembuatan isi laporan 4. Merancang dan membangun Robot EVOCE 5. Membuat dan mengarahkan coding selama penelitian 6. Membuat buku ajar 7. Memberikan pelatihan penggunaan Robot 8. Mendampingi ketua dalam memberikan pelatihan		
UCI RAHMALISA S.Kom, M.Ti Anggota Pengusul 2	STMIK Hang Tuah Pekanbaru	Sistem Informasi	1. Membantu ketua peneliti selama penelitian berlangsung 2. Membantu menyelesaikan laporan hingga selesai 3. Konsentrasi pada analisis dan perancangan sistem 4. Membantu dan mengarahkan coding selama peneltiian sesuai dengan analisis dan perancangan 5. Mendampingi ketua dalam memberikan pelatihan	6134741	2

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

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	Language Learning & Technology (LLT)
2	Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi	Accepted	Language Learning & Technology (LLT)
3	Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi	Accepted	Language Learning & Technology (LLT)

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*)

1	Paten produk	Terbit nomor pendaftaran paten sederhana	Protipe Robot EVOCE
2	Program komputer	Telah bersertifikat	Robot EVOCE
3	Program komputer	Telah bersertifikat	Robot EVOCE

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 Edisi 13 Revisi.

Total RAB 3 Tahun Rp. 299,276,000

Tahun 1 Total Rp. 99,441,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
Bahan	Bahan Penelitian (Habis Pakai)	Arduino Uno Board	pcs	12	120,000	1,440,000
Bahan	Bahan Penelitian (Habis Pakai)	Motor Stepper 28BYJ-48 5V 4-phase	pcs	24	90,000	2,160,000
Bahan	Bahan Penelitian (Habis Pakai)	Driver motor L293D	pcs	12	65,000	780,000
Bahan	Bahan Penelitian (Habis Pakai)	Roda Karet Diameter 40mm	pcs	24	50,000	1,200,000
Bahan	Bahan Penelitian (Habis Pakai)	Cap Tutup Push Button Round	set	72	18,000	1,296,000
Bahan	Bahan Penelitian (Habis Pakai)	Modul Mp3 Player	pcs	15	80,000	1,200,000
Bahan	Bahan Penelitian (Habis Pakai)	Speaker mini	pcs	15	65,000	975,000
Bahan	Bahan Penelitian (Habis Pakai)	Batrei Li Ion 2 S 10000 MaH	pcs	10	220,000	2,200,000
Bahan	Bahan Penelitian (Habis Pakai)	TURBO Charger 3.0	pcs	10	175,000	1,750,000
Bahan	Bahan Penelitian (Habis Pakai)	Akrilik lembaran A3 (420 mm x	Lembar	30	75,000	2,250,000
Bahan	Bahan Penelitian (Habis Pakai)	Lem Akrilik	Botol	4	75,000	300,000
Bahan	Bahan Penelitian (Habis Pakai)	Lampu LED	pcs	30	3,500	105,000
Bahan	Bahan Penelitian (Habis Pakai)	Bbuzzer Sv	pcs	22	10,000	220,000
Bahan	Bahan Penelitian (Habis Pakai)	Kabel USB	pcs	10	55,000	550,000
Bahan	Bahan Penelitian (Habis Pakai)	Mesin Gerinda Mini	set	1	780,000	780,000
Bahan	Bahan Penelitian (Habis Pakai)	Blower/solder Station	set	1	1,600,000	1,600,000
Bahan	Bahan Penelitian (Habis Pakai)	Timah Solder	Gulung	3	75,000	225,000
Bahan	Bahan Penelitian (Habis Pakai)	Sedotan Timah	pcs	2	70,000	140,000
Bahan	Bahan Penelitian (Habis Pakai)	Power Supply Digital	pcs	1	1,800,000	1,800,000
Bahan	Bahan Penelitian (Habis Pakai)	Matras Pembelajaran	pcs	36	120,000	4,320,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
		(Vocabulary) ukuran 1 x 1 meter				
Pengumpulan Data	FGD persiapan penelitian	Pengumpul data	Penelitian	20	1,500,000	30,000,000
Pengumpulan Data	FGD persiapan penelitian	Biaya Konsumsi Rapat	OH	60	25,000	1,500,000
Pengumpulan Data	FGD persiapan penelitian	Pembantu Peneliti	oj	120	25,000	3,000,000
Analisis Data	HR Sekretariat/Administrasi Peneliti	Sekretariat	OH	2	1,500,000	3,000,000
Analisis Data	HR Sekretariat/Administrasi Peneliti	Pengujian Prototype	Kali	8	250,000	2,000,000
Analisis Data	HR Pengolah Data	Pengolah data	OH	3	1,500,000	4,500,000
Analisis Data	Biaya analisis sampel	Jasa Programmer	OH	1	4,500,000	4,500,000
Analisis Data	Biaya konsumsi rapat	Biaya Konsumsi Rapat	OH	6	25,000	150,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	HR Sekretariat/Administrasi Peneliti	Sekretariat	OH	2	1,500,000	3,000,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Uang harian rapat di dalam kantor	Uang harian rapat	OH	3	200,000	600,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Biaya konsumsi rapat	Biaya Konsumsi Rapat	OH	20	25,000	500,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Publikasi artikel di Jurnal Internasional	Publikasi Jurnal Internasional	Paket	1	15,000,000	15,000,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Luaran KI (paten, hak cipta dll)	Luaran KI (paten, Hak Cipta dll)	Paket	1	6,400,000	6,400,000

Tahun 2 Total Rp. 100,000,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
Bahan	Bahan Penelitian (Habis Pakai)	Arduino Uno Board	pcs	12	120,000	1,440,000
Bahan	Bahan Penelitian (Habis Pakai)	Motor Stepper 28BYJ-48 5V 4-phase	pcs	24	90,000	2,160,000
Bahan	Bahan Penelitian (Habis Pakai)	Driver motor L293D	pcs	12	65,000	780,000
Bahan	Bahan Penelitian (Habis Pakai)	Roda Karet Diameter 40mm	pcs	24	50,000	1,200,000
Bahan	Bahan Penelitian (Habis Pakai)	Cap Tutup Push Button Round 12x12x7.3 Knob Tactile Momentary Switch	set	75	18,000	1,350,000
Bahan	Bahan Penelitian (Habis Pakai)	Modul suara	set	20	80,000	1,600,000
Bahan	Bahan Penelitian (Habis Pakai)	Speaker MIni	pcs	20	65,000	1,300,000
Bahan	Bahan Penelitian (Habis	Batrei Li Ion 2 S 10000	pcs	10	220,000	2,200,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
	Pakai)	MaH				
Bahan	Bahan Penelitian (Habis Pakai)	TURBO Charger 3.0	pcs	15	175,000	2,625,000
Bahan	Bahan Penelitian (Habis Pakai)	Akrilik lembaran A3 (420 mm x 300 mm) Tebal 2mm	Lembar	30	75,000	2,250,000
Bahan	Bahan Penelitian (Habis Pakai)	Lem Akrilik	Botol	5	75,000	375,000
Bahan	Bahan Penelitian (Habis Pakai)	Lampu LED	pcs	30	3,500	105,000
Bahan	Bahan Penelitian (Habis Pakai)	Buzzer Sv	pcs	22	10,000	220,000
Bahan	Bahan Penelitian (Habis Pakai)	Kabel USB	pcs	10	55,000	550,000
Bahan	Bahan Penelitian (Habis Pakai)	Mesin Gerinda Mini	set	1	780,000	780,000
Bahan	Bahan Penelitian (Habis Pakai)	Blower	set	1	1,600,000	1,600,000
Bahan	Bahan Penelitian (Habis Pakai)	Timah solder	Gulung	3	75,000	225,000
Bahan	Bahan Penelitian (Habis Pakai)	Sedotan Timah	pcs	2	70,000	140,000
Bahan	Bahan Penelitian (Habis Pakai)	Power Suplay Digital	pcs	1	1,800,000	1,800,000
Bahan	Bahan Penelitian (Habis Pakai)	Matras Pembelajaran (Vocabulary) ukuran 1X1 Meter	pcs	35	120,000	4,200,000
Pengumpulan Data	HR Pembantu Peneliti	Pengolah Data	P	3	1,500,000	4,500,000
Pengumpulan Data	HR Pembantu Peneliti	Biaya konsumsi RapaT	oh	20	25,000	500,000
Pengumpulan Data	HR Pembantu Peneliti	Pembantu Lapangan	OH	60	80,000	4,800,000
Pengumpulan Data	HR Pembantu Peneliti	Pembantu Peneliti	OH	120	25,000	3,000,000
Pengumpulan Data	HR Pembantu Peneliti	Transport Penelitian	Kali	20	200,000	4,000,000
Analisis Data	HR Sekretariat/Administrasi Peneliti	Sekretariat	OH	2	1,500,000	3,000,000
Analisis Data	Biaya analisis sampel	Pengujian Prototype	Kali	20	250,000	5,000,000
Analisis Data	Biaya analisis sampel	Perancangan/Model	Kali	10	150,000	1,500,000
Analisis Data	Biaya analisis sampel	Pelatihan Penggunaan Robot BELANGKAS kepada Orang Tua/Wali, Guru dan Siswa	Kali	20	120,000	2,400,000
Analisis Data	Biaya analisis sampel	Analisis Data (melakukan penyebaran kuisoner/angket kepada orang tua/wali dan guru)	Kali	20	200,000	4,000,000
Analisis Data	Biaya analisis sampel	Pengujian dan Evaluasi Tahap I	Kali	20	100,000	2,000,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
Analisis Data	Biaya analisis sampel	Jasa Programmer	OH	1	4,500,000	4,500,000
Analisis Data	Biaya konsumsi rapat	Konsumsi Rapat	OH	20	25,000	500,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	HR Sekretariat/Administrasi Peneliti	Sekretariat	OH	2	1,500,000	3,000,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Uang harian rapat di dalam kantor	Uang harian rapat	OH	10	500,000	5,000,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Biaya konsumsi rapat	Konsumsi Rapat	OH	20	25,000	500,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Publikasi artikel di Jurnal Internasional	Biaya Publikasi Jurnal Internasional	Paket	1	8,500,000	8,500,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Luaran KI (paten, hak cipta dll)	Luaran KI (Paten, Hakcipta dll)	Paket	1	6,400,000	6,400,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Biaya pembuatan dokumen uji produk	Biaya Uji Produk Robot	Paket	2	5,000,000	10,000,000

Tahun 3 Total Rp. 99,835,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
Bahan	Bahan Penelitian (Habis Pakai)	Arduino Uno Board	pcs	15	120,000	1,800,000
Bahan	Bahan Penelitian (Habis Pakai)	Motor Stepper 288YJ-48SV 4 phase	pcs	30	90,000	2,700,000
Bahan	Bahan Penelitian (Habis Pakai)	Driver Motor 1293D	pcs	15	65,000	975,000
Bahan	Bahan Penelitian (Habis Pakai)	Roda Karet Diameter 40 MM	pcs	30	50,000	1,500,000
Bahan	Bahan Penelitian (Habis Pakai)	Cap tutup Push Button Round 12X12X7,3 knob Tactile Momentary Switch	set	75	18,000	1,350,000
Bahan	Bahan Penelitian (Habis Pakai)	Modul MP3 Player	pcs	15	80,000	1,200,000
Bahan	Bahan Penelitian (Habis Pakai)	Speaker mini	pcs	15	65,000	975,000
Bahan	Bahan Penelitian (Habis Pakai)	Batre Li ion 2 S 10000 MaH	pcs	10	220,000	2,200,000
Bahan	Bahan Penelitian (Habis Pakai)	Turbo Charge 3.0	pcs	15	175,000	2,625,000
Bahan	Bahan Penelitian (Habis Pakai)	Akrilik Lembaran A3	Lembar	30	75,000	2,250,000
Bahan	Bahan Penelitian (Habis Pakai)	Lem Akrilik	Botol	5	75,000	375,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
Bahan	Bahan Penelitian (Habis Pakai)	Lampu LED	pcs	30	3,500	105,000
Bahan	Bahan Penelitian (Habis Pakai)	Buzzer 5V	pcs	22	10,000	220,000
Bahan	Bahan Penelitian (Habis Pakai)	Mesin Gerinda	set	2	780,000	1,560,000
Bahan	Bahan Penelitian (Habis Pakai)	Timah solder	Gulung	5	75,000	375,000
Bahan	Bahan Penelitian (Habis Pakai)	Sedotan Timah	pcs	5	70,000	350,000
Bahan	Bahan Penelitian (Habis Pakai)	Power supply digital	pcs	1	1,800,000	1,800,000
Bahan	Bahan Penelitian (Habis Pakai)	Matras pembelajaran Vocabulary Ukuran 1X1 Meter	pcs	40	120,000	4,800,000
Pengumpulan Data	FGD persiapan penelitian	Konsumsi di kantor	OH	50	25,000	1,250,000
Pengumpulan Data	HR Pembantu Peneliti	Pembantu Peneliti	OJ	120	25,000	3,000,000
Pengumpulan Data	HR Pembantu Peneliti	Pembantu Lapangan	OH	60	80,000	4,800,000
Pengumpulan Data	HR Sekretariat/Administrasi Peneliti	Sekretariat	OH	2	1,500,000	3,000,000
Pengumpulan Data	Biaya konsumsi	Konsumsi di lapangan	OH	150	25,000	3,750,000
Sewa Peralatan	Peralatan penelitian	Sewa Labor Komputer	Kali	10	750,000	7,500,000
Analisis Data	HR Sekretariat/Administrasi Peneliti	Sekretariat	OH	2	1,500,000	3,000,000
Analisis Data	HR Sekretariat/Administrasi Peneliti	Jasa analisis Data	OH	5	400,000	2,000,000
Analisis Data	Biaya analisis sampel	Jasa Programmer	OH	1	4,500,000	4,500,000
Analisis Data	Biaya analisis sampel	Pelatihan Robot EVOCE ke Guru/wali/siswa	Kali	5	1,000,000	5,000,000
Analisis Data	Biaya analisis sampel	Pengujian Evaluasi Terakhir	Kali	5	500,000	2,500,000
Analisis Data	Transport Lokal	Transport pelatihan	Kali	5	200,000	1,000,000
Analisis Data	Transport Lokal	Transport Pengujian Robot	Kali	20	200,000	4,000,000
Analisis Data	Biaya konsumsi rapat	Konsumsi rapat	OH	20	25,000	500,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	HR Sekretariat/Administrasi Peneliti	Sekretariat	OH	1	1,500,000	1,500,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Biaya konsumsi rapat	Konsumsi rapat	OH	15	25,000	375,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Publikasi artikel di Jurnal Internasional	Biaya Publikasi Jurnal Internasional	Paket	1	8,600,000	8,600,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Luaran KI (paten, hak cipta dll)	Biaya Luaran KI (paten, hak cipta, dll)	Paket	1	6,400,000	6,400,000
Pelaporan, Luaran Wajib, dan Luaran Tambahan	Biaya pembuatan dokumen uji produk	Biaya uji Produk	Kali	10	1,000,000	10,000,000

Petunjuk:Pengusul hanya diperkenankan mengisi di tempat yang telah disediakan sesuai dengan petunjuk pengisian dan tidak diperkenankan melakukan modifikasi template atau penghapusan di setiap bagian.

Tuliskan judul usulan penelitian

JUDUL USULAN

ROBOT EVOCE SEBAGAI UPAYA MENINGKATKAN KEMAMPUAN *VOCABULARY* PADA *ENGLISH FOR YOUNG LEARNERS*

RINGKASAN

Ringkasan penelitian tidak lebih dari 500 kata yang berisi latar belakang penelitian, tujuan dan tahapan metode penelitian, luaran yang ditargetkan, serta uraian TKT penelitian yang diusulkan.

Pembelajaran bahasa asing berbantuan robot merupakan salah satu bagian integral dari *Technology Enhanced Language Learning* mendapatkan banyak perhatian seiring dengan perkembangan teknologi pengenalan suara dan sintesis. Dalam beberapa tahun terakhir, pendekatan pembelajaran bahasa asing lebih menekankan pada interaksi manusia-robot untuk menciptakan pengaturan kontekstual untuk pembelajaran bahasa yang lebih interaktif dan otentik, terutama untuk melibatkan *English for young learners*. Contoh pengaturan seperti itu adalah menggunakan skenario nyata bagi robot untuk berinteraksi dengan *English for young learners* dengan penggunaan robot untuk membuat gerakan sehingga perhatian peserta didik terfokus.

Permasalahan yang pertama pada *English for young learners* adalah fokus dan konsentrasi belajar, sementara kita mengetahui anak-anak pada usia ini lebih banyak bermain dan sangat aktif. Sehingga ketika guru akan menyampaikan konten pembelajaran, mereka lebih banyak bergerak dan bermain. Permasalahan yang kedua adalah keberagaman variasi media pembelajaran yang harus dipersiapkan guru bahasa asing untuk *English for young learners* sehingga penguasaan *vocabulary* mudah dihapal. Permasalahan ketiga adalah lingkungan pembelajaran yang kurang kondusif dimana handphone dan gadget lebih sering digunakan oleh *English for young learners* selama masa pembelajaran daring ketika musibah *Covid*-19 merebak sehingga dampak psikologis sangat mempengaruhi penguasaan bahasa asing. Permasalahan keempat adalah pembelajran interaktif yang dirasa perlu dikembangkan di tahap *English for young learners.*Target luaran untuk mengatasi permasalahan yang ada diatas akan diciptakan media pembelajaran interaktif berupa Robot yang diberi nama Robot EVOCE (*English Vocabulary for Children*).

Penelitian ini bertujuan untuk menciptakan alternatif media pembelajaran yang interaktif dengan memanfaatkan robot berbasis *Prototyping Method.* Pada penelitian ini pertama anak akan menggunakan Robot dalam pembelajaran Bahasa Inggris dengan mengajak anak berkolaborasi dengan melakukan instruksi pada robot untuk melakukan suatu aktivitas pembelajaran (pengenalan angka, huruf, dan gambar serta bunyi (*pronunciation)*) yang mengarah kepada pengenalan *vocabulary* bahasa Inggris sehingga menarik minat anak *English for young learners* untuk belajar membaca, mengucapkan dan meniru *vocabulary* Bahasa Inggris. Kedua, *English for young learners* dapat mengikuti pembelajaran baik secara individu maupun berkelompok, sehingga mampu meningkatkan kemampuan interaksi sosial anak.

Metode *Prototyping* digunakan dalam penelitian ini bertujuan untuk mendapatkan gambaran Robot yang akan dirancang dan dibangun yang kemudian dievaluasi oleh *user*.

Prototype yang dievaluasi oleh *user* selanjutnya akan dijadikan acuan untuk membuat Robot yang dijadikan produk akhir sebagai *output* dari penelitian ini. Robot ini dibangun dengan *Arduino Uno* yang dijalankan dengan perintah Bahasa C, berbasis mikrokontroller dan sensor yang digunakan sebagai media *input.* Luaran penelitian ini berupa model/rancangan kegiatan prototipe robot EVOCE untuk pengajaran *Vocabulary* khusus *English for young learners.*

Perencanaan penelitian tahun 2022 yaitu model rancanganan protoptipe Robot EVOCE (*English Vocabulary for Children*) dimulai dari analisis kebutuhan sistem dengan mencari studi literature yang sesuai selanjutnya pemilihan microkontroler, sensor, Arduino Uno yang akan digunakan. Tahun 2023, perancangan sistem Robot EVOCE dengan mengembangkan Model Robot EVOCE dilakukan Pre-Test. Objek penelitian setelah menggunakan Robot EVOCE dan selanjutnya evaluasi hasil penggunaan Robot EVOCE. Tahun 2024, Robot EVOCE untuk pembelajaran yang akan diproduksi dan digunakan secara massal dengan bekerjasama dengan Sekolah Dasar untuk mengembangkan produk ini. Selanjutnya Robot EVOCE ini bisa digunakan di bidang pendidikan untuk membantu pembelajaran *Vocabulary* bahasa asing khususnya Bahasa Inggris *English for young learners.*

KATA KUNCI

Kata kunci maksimal 5 kata

Kata_kunci_; Robot; Pembelajaran interaktif; *English for young learners*; *Vocabulary*; Prototipe.

LATAR BELAKANG

Latar belakang penelitian tidak lebih dari 500 kata yang berisi latar belakang dan permasalahan yang akan diteliti, tujuan khusus dan studi kelayakannya. Pada bagian ini perlu dijelaskan uraian tentang spesifikasi keterkaitan skema dengan bidang fokus atau renstra penelitian PT.

Perkembangan tehnologi yang cukup signifikan memberikan kesempatan untuk para pengajar guru dan dosen mengembangkan beragam alternatif media pembelajaran sebagai wadah media dalam proses belajar mengajar. Tinjauan literatur dari *Technology Enhanced Language Learning* untuk pembelajaran bahasa asing mengungkapkan bahwa sebagian besar terkait dengan aplikasi robot untuk pembelajaran bahasa Inggris meningkat dalam beberapa tahun terakhir khususnya di anak *English for young learners* [1]. Robot juga telah digunakan di kelas *English for young learners* untuk membantu pembelajaran kosa kata dan produksi [2].

Sebagian besar studi terfokus pada hasil belajar bahasa Inggris pada perkembangan kognitif *English for young learners*, selanjutnya dibandingkan dengan bentuk teknologi lainnya, salah satu keunggulan robot yang telah lama diakui oleh penelitian adalah memungkinkan anak-anak mengembangkan keterampilan sensorimotorik melalui interaksi dengan objek nyata [3].

Mewabahnya Pandemi *Covid*-19 mengakibatkan semua komponen terganggu termasuk pengajaran. Pengajaran yang terbatas dengan pengguaan gadget dan komputer menjadi dominan tanpa adanya kegiatan pengajaran tatap muka. Khususnya pembelajaran bahasa Inggris sebagai bahasa asing yang hanya tersampaikan kepada *English for young learners* dengan berupa tugas-tugas yang diberikan guru dengan modul dan bahan ajar yang monoton, sehingga membuat mereka mudah lelah dan bosan. Dengan kondisi seperti tersebut motivasi mereka semakin menurun dan akhirnya materi pembelajaran menjadi tidak menyenangkan. Padahal pada masa tahap ini mereka sedang aktif dan memiliki rasa ingin tahu yang tinggi, sehingga diperlukan media pembelajaran yang interaktif dan menarik. Dari penjabaran diatas, dapat disimpulkan bahwa permasalahan yang dihadapi *English for young learners* adalah bagi *English for young learners* dalam mempelajari bahasa asing khususnya Bahasa Inggris diperlukan adanya media pembelajaran yang menarik dan interaktif sehingga mereka bisa konsentrasi dan fokus terhadap

pengenalan *Vovabulary dasar*. Permasalahan selanjutnya adalah pengguaan gadget dan komputer yang cukup lama buat *English for young learners*, sehingga paparan sinyal dan ekposisi negatif gadget membuat mereka terganggu perkembangan sensorik motor halus dan kasarnya. Secara psikologi gadget juga memberikan dampak ketidakstabilan emosi pada anak.

Tujuan Khusus

Pelaksanaan Penelitian ini akan dilakukan selama 3 tahun yaitu:
Tahun 2022: model rancanganan protoptipe Robot EVOCE (*English Vocabulary for Children*) dimulai dari analisis kebutuhan sistem dengan mencari studi literature yang sesuai selanjutnya pemilihan microkontroler, sensor, Arduino Uno yang akan digunakan.
Tahun 2023: perancangan sistem Robot EVOCE dengan mengembangkan Model Robot EVOCE dilakukan Pre-Test pada objek penelitian setelah menggunakan Robot EVOCE dan selanjutnya evaluasi hasil penggunaan Robot EVOCE.
Tahun 2024: Robot EVOCE untuk pembelajaran yang akan diproduksi dan digunakan secara massal dengan bekerjasama dengan Sekolah Dasar untuk mengembangkan produk ini. Selanjutnya Robot EVOCE ini bisa digunakan di bidang pendidikan untuk membantu pembelajaran *Vocabulary* bahasa asing khususnya Bahasa Inggris *English for young learners*.

Urgensi Penelitian

1) Bagi Dinas Pendidikan Propinsi Riau, Robot EVOCE dapat menjadi inovasi terbarukan khususnya didaerah Riau dalam pengajaran *Vocabulary* pada *English for young learners;*
2) Bagi sekolah-sekolah Sekolah Dasar di Propinsi Riau dapat menggunakan Robot EVOCE ini dalam pembelajaran sebagai media alternatif yang terbarukan;
3) Bagi para guru-guru Bahasa Inggris memberikan kemudahan dalam memberikan pembelajaran *Vocabulary* khususnya pada *English for young learners*;
4) Bagi pengguna Robot EVOCE dapat memanfaatkan kecanggihan tehnologi dalam bentuk *real* (nyata) bisa disentuh dan dilihat secara visual oleh siswa-siswa di *English for young learners*

Sehingga, dengan pertimbangan diatas maka dirasa perlu untuk meningkatkan konsentrasi dan motivasi belajar *English for young learners* dengan menggunakan manfaat media tehnologi Robot dalam pembelajaran *Vocabulary*..

TINJAUAN PUSTAKA

Tinjauan pustaka tidak lebih dari 1000 kata dengan mengemukakan *state of the art* dalam bidang yang diteliti/teknologi yang dikembangkan. Penyajian dalam bagan dapat dibuat dalam bentuk JPG/PNG yang kemudian disisipkan dalam isian ini. Sumber pustaka/referensi primer yang relevan dan dengan mengutamakan hasil penelitian pada jurnal ilmiah dan/atau paten yang terkini. Disarankan penggunaan sumber pustaka 10 tahun terakhir.

Robot

Robot sebagai alat bantu pembelajaran bahasa didefinisikan sebagai penggunaan robot untuk mengajarkan ekspresi bahasa atau keterampilan pemahaman dalam berbicara, menulis, membaca, atau mendengarkan (7). Pemanfaatkan robot pendidikan untuk tujuan pengajaran dinilai dari kemanjurannya dalam transfer informasi. Oleh karena itu, ada perlu pertimbangan khusus domain saat merancang bentuk, ucapan, dan perilaku mereka.

Robot sosial tampaknya sangat tepat untuk digunakan dalam pembelajaran bahasa karena merupakan upaya sosial yang inheren bukan hanya tentang paparan kata-kata tetapi tentang mengkomunikasikan makna dan interaksi sosial yang terjadi menggunakan kata-kata untuk berkomunikasi sehingga robot berpotensi menjadi mitra komunikasi yang sangat tepat dibandingkan dengan teknologi lain [8].

Robot dapat membantu beberapa tujuan dalam pembelajaran bahasa. Robot dapat digunakan untuk melibatkan siswa sebagai mitra percakapan mereka, membantu pengenalan

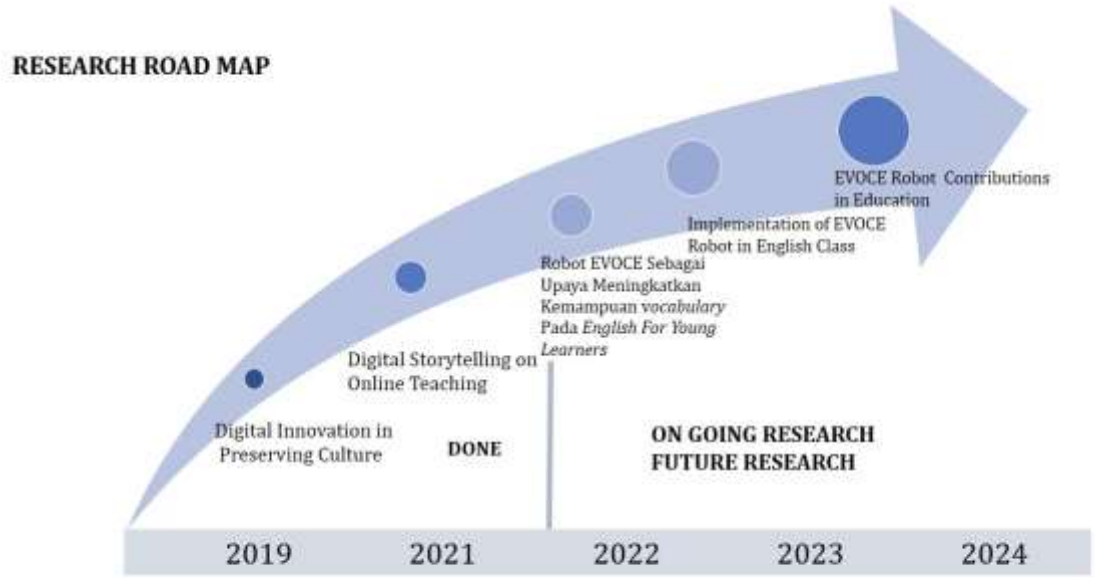
kosakata atau tata bahasa [9], bantuan pengucapan [10], pemahaman membaca [11] atau kejelasan tulisan [12], meningkatkan keterampilan mendengarkan [13], menilai kemampuan bahasa [14], meningkatkan afek positif atau mengurangi kecemasan [15].

State of the Art

Penelitian yang dilakukan [4] bahwa bahasa berakar dalam interaksi sensorimotor kehidupan nyata dan pengalaman sensorimotor ditemukan terkait dengan pemrosesan bahasa sehingga penggunaan benda berwujud (Robot) memungkinkan *English for young learners* mempelajari bahasa asing melalui interaksi sensorimotor dengan benda fisik.

Beberapa penelitian, robot telah bertindak sebagai asisten pengajar atau tutor di kelas dimana siswa belajar dari robot [5]. Robot telah digunakan di kelas untuk membantu pembelajaran kosa kata dan produksi bahasa (2). Penelitian yang dilakukan [6] menunjukkan bahwa Robot meningkatkan keterlibatan dan motivasi siswa dikelas.

Kebaharuan penelitian ini adalah menciptakan alternatif media pembelajaran yang interaktif dengan memanfaatkan robot berbasis *Prototyping Method* yaitu Robot EVOCE yang akan meningkatkan *Vocabulary* pada *English for young Learners*.



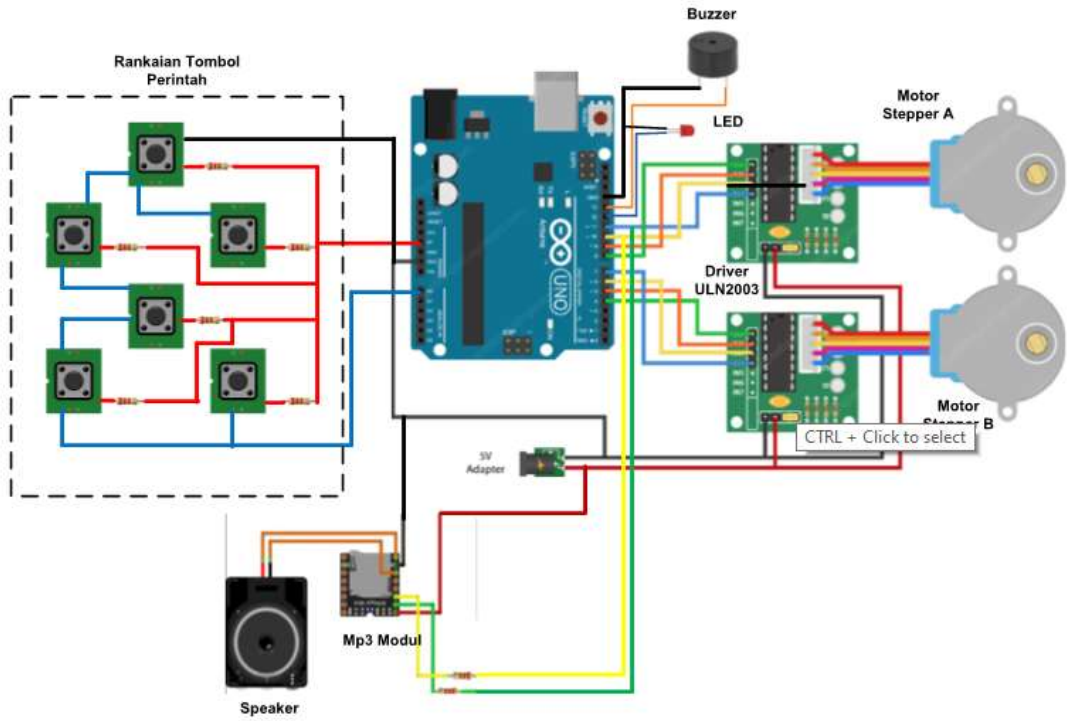
Research Road Map from 2019 to 2024

Gambar 1: Road Map Penelitian

METODA

Metode atau cara untuk mencapai tujuan yang telah ditetapkan ditulis tidak melebihi 600 kata. Bagian ini dilengkapi dengan diagram alir penelitian yang menggambarkan apa yang sudah dilaksanakan dan yang akan dikerjakan selama waktu yang diusulkan. Format diagram alir dapat berupa file JPG/PNG. Bagan penelitian harus dibuat secara utuh dengan penahapan yang jelas, mulai dari awal bagaimana proses dan luarannya, dan indikator capaian yang ditargetkan. Usulan penelitian dasar yang diusulkan dapat mencakup prinsip dasar dari teknologi, formulasi konsep dan/atau aplikasi teknologi, hingga pembuktian konsep (*proof-of-concept*) fungsi dan/atau karakteristik penting secara analitis dan eksperimental. Penelitian Dasar dapat berorientasi kepada penjelasan atau penemuan (invensi) guna mengantisipasi suatu gejala/fenomena, kaidah, model, atau postulat baru yang mendukung suatu proses teknologi, kesehatan, pertanian, dan lain-lain dalam rangka mendukung penelitian terapan. Sebutkan juga kualitas luaran berupa jurnal atau prosiding yang menjadi target. Bagian ini harus juga menjelaskan tugas masing-masing anggota pengusul sesuai tahapan penelitian yang diusulkan.

Penelitian ini menggunakan Model *prototype* dimana *prototype* Robot EVOCE didesain dan dibangun terlebih dahulu yang tujuan akhirnya adalah diimplementasikan ke pihak user. Model *prototype* Robot EVOCE dapat digunakan untuk menyambungkan ketidakpahaman pelanggan kepada pembuat aplikasi. Adapun langkah-langkah dari mode *prototyping* yaitu peneliti akan mengumpulkan data-data yang dibutuhkan dalam proses pembuatan Robot, dan tahap ini juga merupakan langkah awal untuk menemukan rumusan masalah terkait bagaimana merancang Robot EVOCE yang akan dijadikan sebagai media pembelajaran interaktif untuk anak usia dini. Lalu akan dibuat program *prototype* untuk memberikan gambaran kepada Users/pelanggan.
Prototype yang akan diberikan adalah sebagai berikut :

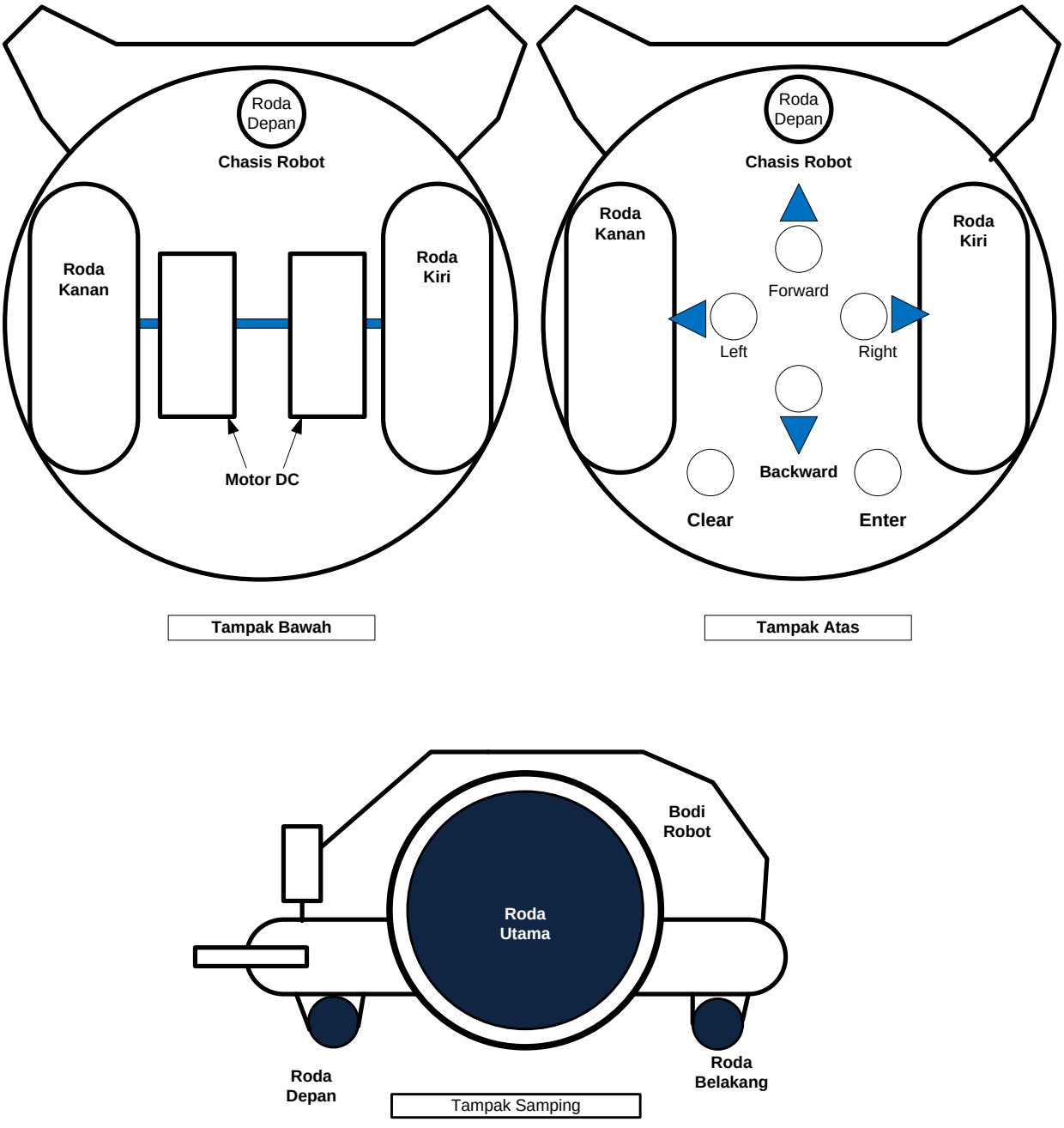


Gambar 2. Rangkaian Robot EVOCE

Keterangan pengoperasian Robot EVOCE:

1. Rangkaian robot terdiri dari rangkaian microcontroller, rangkaian tombol perintah, dan rangkaian penggerak sert rangakaian modul suara. Untuk menggunakan robot user terlebih dahulu harus memasukkan perintah melalui interface tombol yang tersedia.
2. Untuk berinteraksi dengan robot ini maka user dapat melakukannya melalui lima buah tombol instruksi yang tersedia. Intruksi dimulai dengan menekan tombol "***Clear***" kemudian robot mengeluarkan suara "Im Ready" artinya robot siap untuk menerima perintah.
3. Seluruh perintah akan disimpan kedalam memory EEPROM yang terdapat pada microcontroller arduino.
4. Saat user menekan tombol eksekusi "***Enter***", maka robot akan mengeluarkan suara "*Let's do it*".
5. Kemudian robot bergerak sesuai dengan urutan perintah yang telah diinputkan kedalam memory EEPROM tersebut.

6. Fungsi motor stepper pada penggerak robot ini adalah agar jarak tiap langkah yang dijalankan oleh robot tetap konsisten.
7. Robot akan menampilkan suara bacaan dari tiap-tiap kosakata yang terdapat pada matras yang dilewatinya dengan menggunakan bahasa inggris.
8. Kemampuan robot dalam menampilkan suara meruapakan fungsi utama dari modul Mp3 yang ditanamkan pada robot. Dengan modul Mp3 ini robot dapat berinterkasi dengan pengguna melalui bahasa inggris dan mampu mengucapkan tiap-tiap kosakata yang ada pada matras sesuai dengan ucapan dalam bahasa Inggris.



Gambar 3. Desain Prototype Robot EVOCE

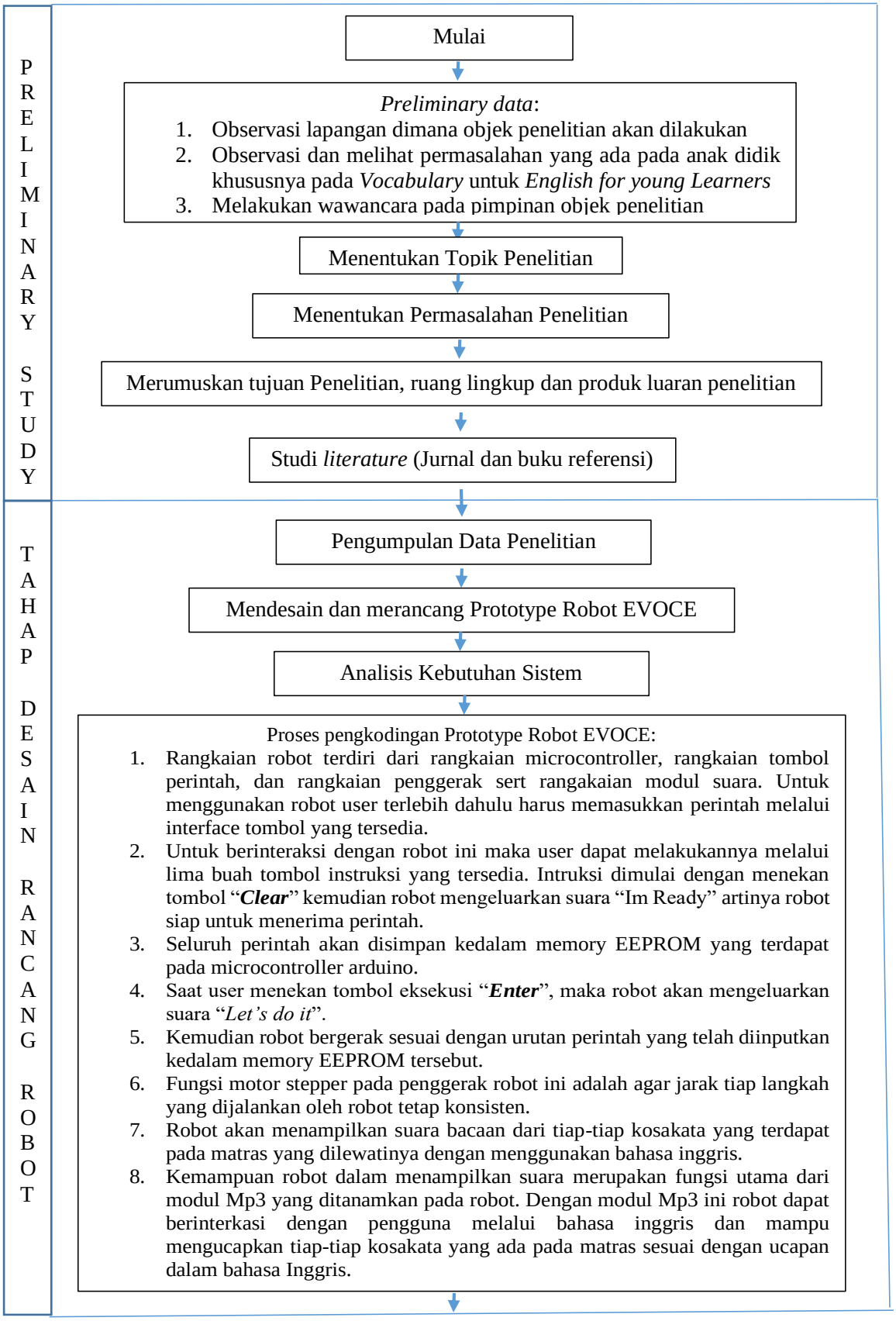
Langkah-langkah pelaksanaan penelitian ini adalah:

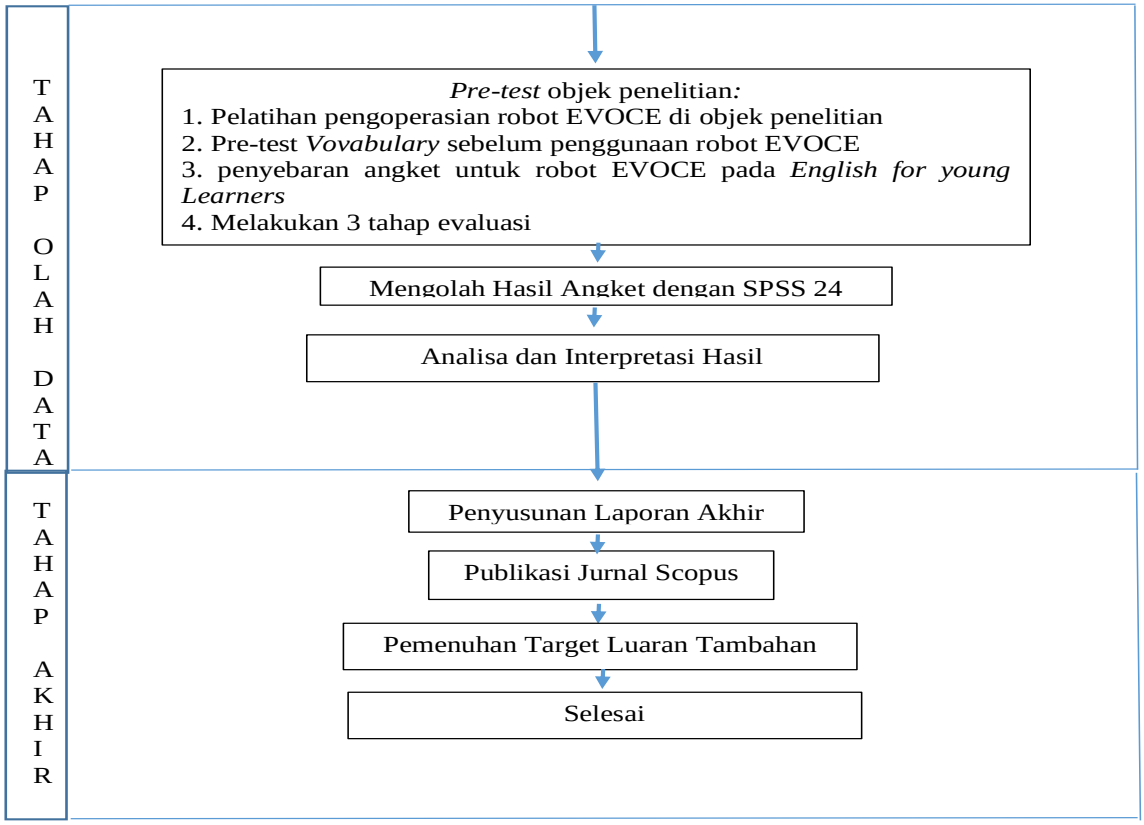
1. Peneliti akan mengumpulkan data-data yang dibutuhkan dalam proses pembuatan Robot EVOCE, dan tahap ini juga merupakan langkah awal untuk menemukan rumusan masalah terkait bagaimana merancang Robot EVOCE yang akan dijadikan sebagai media pembelajaran interaktif *Vocabulary* untuk *English for young Learners*.
2. Lalu akan dibuat program *prototype* untuk memberikan gambaran kepada pelanggan dan users seperti pada gambar 2 dan gambar 3 diatas.
3. Langkah terakhir adalah melakukan demonstrasi Robot EVOCE kepada *users* atau pengguna dan pengujian dilakukan untuk memastikan Robot EVOCE berjalan sesuai fungsinya.

Selanjutnya setelah tiga langkah diatas telah dilakukan, peneliti pada tahapan ini akan melakukan analisis data terhadap penelitian yang dilakukan. Sebelum melakukan analisis data, tim peneliti akan memberikan pelatihan penggunaan Robot EVOCE kepada anak, wali dan guru. Kemudian tim peneliti akan melakukan pegujian terhadap sampel anak yang diambil secara acak dalam proses membaca dan pengucapan *Vocabulary* Bahasa Inggris untuk dijadikan acuan perbandingan terhadap hasil evaluasi akhir nanti. Analisis data yang dilakukan adalah membuat kuesioner yang akan diberikan kepada wali dan guru dengan skala likert untuk menilai dan mengevaluasi pemahaman anak dalam menggunakan Robot EVOCE baik dirumah maupun disekolah. Terakhir data akan di olah dengan menggunakan SPSS 24 untuk melihat perbandingan sebelum dan sesudah anak melakukan pembelajaran membaca dan pengucapan *Vocabulary* Bahasa Inggris dengan Robot EVOCE.

Berikut dibawah ini adalah diagram alir penelitian:

Gambar 4. Diagram Alir Penelitian


PRELIMINARY STUDY
Mulai
Preliminary data:
1. Observasi lapangan dimana objek penelitian akan dilakukan
2. Observasi dan melihat permasalahan yang ada pada anak didik khususnya pada Vocabulary untuk English for young Learners
3. Melakukan wawancara pada pimpinan objek penelitian
Menentukan Topik Penelitian
Menentukan Permasalahan Penelitian
Merumuskan tujuan Penelitian, ruang lingkup dan produk luaran penelitian
Studi literature (Jurnal dan buku referensi)
TAHAP DESAIN RANCANG ROBOT
Pengumpulan Data Penelitian
Mendesain dan merancang Prototype Robot EVOCE
Analisis Kebutuhan Sistem
Proses pengkodingan Prototype Robot EVOCE:
1. Rangkaian robot terdiri dari rangkaian microcontroller, rangkaian tombol perintah, dan rangkaian penggerak sert rangakaian modul suara. Untuk menggunakan robot user terlebih dahulu harus memasukkan perintah melalui interface tombol yang tersedia.
2. Untuk berinteraksi dengan robot ini maka user dapat melakukannya melalui lima buah tombol instruksi yang tersedia. Intruksi dimulai dengan menekan tombol "Clear" kemudian robot mengeluarkan suara "Im Ready" artinya robot siap untuk menerima perintah.
3. Seluruh perintah akan disimpan kedalam memory EEPROM yang terdapat pada microcontroller arduino.
4. Saat user menekan tombol eksekusi "Enter", maka robot akan mengeluarkan suara "Let's do it".
5. Kemudian robot bergerak sesuai dengan urutan perintah yang telah diinputkan kedalam memory EEPROM tersebut.
6. Fungsi motor stepper pada penggerak robot ini adalah agar jarak tiap langkah yang dijalankan oleh robot tetap konsisten.
7. Robot akan menampilkan suara bacaan dari tiap-tiap kosakata yang terdapat pada matras yang dilewatinya dengan menggunakan bahasa inggris.
8. Kemampuan robot dalam menampilkan suara merupakan fungsi utama dari modul Mp3 yang ditanamkan pada robot. Dengan modul Mp3 ini robot dapat berinterkasi dengan pengguna melalui bahasa inggris dan mampu mengucapkan tiap-tiap kosakata yang ada pada matras sesuai dengan ucapan dalam bahasa Inggris.


TAHAP OLAH DATA
Pre-test objek penelitian:
1. Pelatihan pengoperasian robot EVOCE di objek penelitian
2. Pre-test *Vovabulary* sebelum penggunaan robot EVOCE
3. penyebaran angket untuk robot EVOCE pada *English for young Learners*
4. Melakukan 3 tahap evaluasi
Mengolah Hasil Angket dengan SPSS 24
Analisa dan Interpretasi Hasil
TAHAP AKHIR
Penyusunan Laporan Akhir
Publikasi Jurnal Scopus
Pemenuhan Target Luaran Tambahan
Selesai

Kepakaran dan Tugas/Kewajiban Masing-masing Pengusul

No	Nama	Status	Kepakaran	Tugas/Kewajiban
1	Dr. Sri Yuliani, S.Pd, M.Pd	Ketua Peneliti	Pendidikan Bahasa Inggris	1. Bertanggung jawab pada proses penelitian 2. Memeriksa dan membantu proses penelitian dari awal sampai akhir 3. Memeriksa dan pembuatan isi laporan dan kesimpulan penelitian 4. Bertanggung jawab atas hasil penelitian 5. Memeriksa analisis kebutuhan dan desain 6. Memberikan pelatihan penggunaan Robot 7. Membantu proses analisa data dan Evaluasi 8. Mengolah data menggunakan SPSS 9. Interpretasi hasil evaluasi
2	Arie Linarta, S.Kom, M.Kom	Anggota Peneliti 1	Sistem Informatika Komputer	1. Bertanggung jawab pada proses penelitian 2. Memeriksa dan membantu proses penelititan dari awal sampai akhir 3. Memeriksa dan pembuatan isi laporan 4. Merancang dan membangun Robot EVOCE 5. Membuat dan mengarahkan *coding* selama penelitian 6. Membuat buku ajar 7. Memberikan pelatihan penggunaan Robot 8. Mendampingi ketua dalam memberikan pelatihan
3	Uci Rahmalisa, S.Kom, M.TI	Anggota Peneliti 2	Sistem Informatika Komputer	1. Membantu ketua peneliti selama penelitian berlangsung 2. Membantu menyelesaikan laporan hingga selesai 3. Konsentrasi pada analisis dan perancangan sistem 4. Membantu dan mengarahkan *coding* selama peneltiian sesuai dengan analisis dan perancangan

Indikator Capaian Penelitian

1. Tahun 2022 yaitu model rancanganan protoptipe Robot EVOCE (*English Vocabulary for Children*) dimulai dari analisis kebutuhan sistem dengan mencari studi literature yang sesuai selanjutnya pemilihan microkontroler, sensor, Arduino Uno yang akan digunakan. Hasil penelitian akan dipublikasikan di journal SCOPUS Q1 dengan link https://www.lltjournal.org//
2. Tahun 2023, perancangan sistem Robot EVOCE dengan mengembangkan Model Robot EVOCE dilakukan Pre-Test. Objek penelitian setelah menggunakan Robot EVOCE dan selanjutnya evaluasi hasil penggunaan Robot EVOCE. Hasil penelitian akan dipublikasikan di journal scopus Q1 dengan link https://www.lltjournal.org//
3. Tahun 2024, Robot EVOCE untuk pembelajaran yang akan diproduksi dan digunakan secara massal dengan bekerjasama dengan Sekolah Dasar untuk mengembangkan produk ini. Selanjutnya Robot EVOCE ini bisa digunakan di bidang pendidikan untuk membantu pembelajaran *Vocabulary* bahasa asing khususnya Bahasa Inggris *English for young learners*. Hasil penelitian akan dipublikasikan di journal scopus Q1 dengan link https://www.lltjournal.org//

JADWAL PENELITIAN

Jadwal penelitian disusun dengan mengisi langsung tabel berikut dengan memperbolehkan penambahan baris sesuai banyaknya kegiatan.

Tahun ke-1

No	Nama Kegiatan	Bulan											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Analisis kebutuhan dan perencanaan sistem Robot EVOCE	x											
2	Perancangan sistem	x	x										
3	Pembuatan prototipe sistem		x	x									
4	Pembangunan Robot EVOCE		x	x	x	x	x						
5	Simulasi sistem							x					
6	Implementasi Robot EVOCE							x	x				
7	Pelatihan bagi *users*									x			
8	Monitoring dan evaluasi							x	x	x	x		
9	Pemenuhan luaran wajib dan tambahan penelitian												
10	Pembuatan *feasibility study* sistem untuk tahun berikutnya							x	x	x	x	x	
11	Pelaporan												x

Tahun ke-2

No	Nama Kegiatan	Bulan											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Analisis *feasibility study* sistem Robot EVOCE tahun sebelumnya	x											
2	Perancangan Revisi sistem	x	x										
3	Pembuatan ulang prototipe sistem		x	x									
4	Pembangunan ulang Robot EVOCE		x	x	x	x	x						
5	Simulasi sistem terbarukan							x					
6	Implementasi Robot EVOCE di *users*							x	x				

7	Pelatihan lanjutan bagi *users*									x			
8	Monitoring dan evaluasi							x	x	x	x		
9	Pemenuhan luaran wajib dan tambahan												
	penelitian							x	x	x	x	x	
10	Pembuatan *feasibility study* sistem untuk tahun berikutnya											x	
11	Pelaporan hasil												x

Tahun ke-3

No	Nama Kegiatan	Bulan											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Review Masukan dari *users* pada tahun sebelumnya	x											
2	Revisi sistem robot	x	x										
3	Penggunaan robot EVOCE secara terbatas		x	x									
4	Evaluasi Robot EVOCE di penggunaan terbatas		x	x	x	x	x						
5	Simulasi sistem secara global							x					
6	*Launching* Robot EVOCE secara permintaan *Users*							x	x				
7	Pelatihan dan panduan pada *users*									x			
8	Monitoring dan evaluasi							x	x	x	x		
9	Pemenuhan luaran wajib dan tambahan												
	penelitian							x	x	x	x	x	
10	Pembuatan *feasibility study* untuk pengembangan system											x	
11	Pelaporan hasil											x	x

DAFTAR PUSTAKA

Daftar pustaka disusun dan ditulis berdasarkan sistem nomor sesuai dengan urutan pengutipan. Hanya pustaka yang disitasi pada usulan penelitian yang dicantumkan dalam Daftar Pustaka.

1. Alemi, M., Meghdari, A., & Ghazisaedy, M. (2015). The impact of social robotics on L2 learners' anxiety and attitude in English vocabulary acquisition. International Journal of Social Robotics, 7(4), 523–535. doi:10.1007/s12369-015-0286-y.
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LAMPIRAN 1. BIODATA PENGUSUL

A. BIODATA KETUA PENGUSUL

Nama	Dr SRI YULIANI
NIDN/NIDK	1020077102
Pangkat/Jabatan	-/Lektor
E-mail	sriyuliani@edu.uir.ac.id
ID Sinta	5981384
h-Index	0

Publikasi di Jurnal Internasional terindeks

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)
1	English lecturers' beliefs and practices in vocabulary learning	co-author	Studies in English Language and Education, 2020, 7, 2, 2461-0275	http://www.jurnal.un
2	Initial Need Assessment on English Teaching Based on Riau Malay Folklore: Digital Innovation in Preserving Culture	first author	Education Quarterly Reviews, 2020, 3, 1, 2621-5799	https://files.eric.e
3	"Alternative" Assessment: Performance Tests in Microteaching Class	first author	Advances in Social Science, Education and Humanities Research (ASSEHR), 2017, 1, 10, 2352-5398	http://repository.ui
4	Perceptions of Education Role in Developing Society: A Case Study at Riau, Indonesia		Journal Of Education and Learning, 2017, 6, 1, 1927-5250	http://www.ccsenet.o

Publikasi di Jurnal Nasional Terakreditasi Peringkat 1 dan 2

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)
1	Digital Storytelling Design: Riau Malay Folklore	first author	AL-ISHLAH: Jurnal Pendidikan 13 (3), 1735-1746, 2021, 13, 3, 2597-940X	http://journal.staih
2	Sociolinguistics perspectives on gender patterns in instagram	first author	Journal of Education and Learning (EduLearn), 2020, 14, 1, 2302-9277	http://journal.uad.a
3	POLA PENGASUHAN ANAK DALAM KONTEKS PENDIDIKAN PERAN PEMERINTAH DAN ORANG TUA Children's Care Patterns in Educational Context; Role of Government and Parents		Perspektif Pendidikan dan Keguruan, 2019, 10, 1, 2579-9525	https://journal.uir.
4	Role of Mobile Phone for English Language Teaching		J-SHMIC : Journal of English for Academic, 2019, 6, 1, 2541-1446	http://journal.uir.a
5	Classroom Application of Micro Teaching : An Analysis of Students' Perspectives		J-SHMIC(Journal of English for Academic), 2018, 5, 1, 2541-1446	http://journal.uir.a

Prosiding seminar/konverensi internasional terindeks

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)
1	"Alternative" Assessment: Performance Tests In Microteaching Class	first author	Proceedings of the Fifth International Seminar on English Language and Teaching (ISELT 2017), 2017, 110, 149-154, 2352-5398	http://www.atlantis-
2	CLIL (CONTENT AND LANGUAGE INTEGRATED LEARNING) FOR ACHIEVING POSITIVE OUTCOMES OF STUDENTS COLLEGE	first author	Proceedings of ISELT FBS Universitas Negeri Padang, 2015, 3, 443-450, 978-602-17017-7-5	http://ejournal.unp.
3	The Implementation of SIOP Model in Teaching English at Mechanical Engineering	co-author	The 62nd TEFLIN International Conference 2015, 2015, 09, 851-860, 978-602-294-066-1	repository.unp.ac.id
4	The Implementation of SIOP Model in Teaching English at Mechanical Engineering	co-author	The 62nd TEFLIN International Conference 2015: Teaching and Assessing L2 … | vol: | issue : | 2015, 2015, 62, 851-860, 978-602-294-066-1	repository.unp.ac.id

Buku

No	Judul Buku	Tahun Penerbitan	ISBN	Penerbit	URL (jika ada)
1	ENGLISH FOR MECHANICAL	2017	602-6370-63-3	aswaja pressindo jogjakarta	-
2	Translation	2017	602-6370-63-3	Aswaja Jokjakarta	-

Perolehan KI

No	Judul KI	Tahun Perolehan	Jenis KI	Nomor	Status KI (terdaftar/granted)	URL (jika ada)
1	Translation (FROM THEORIES TO PRACTICE)	2018	Hak Cipta		Terdaftar	-
2	ENGLISH FOR MECHANICAL ENGINEERING	2018	Hak Cipta		Terdaftar	-
3	English for Mechanical Engineering	2017	Hak Cipta		Granted	https://e-hakcipta.d
4	TRANSLATION (from Theories to Practice)	2017	Hak Cipta		Granted	https://e-hakcipta.d

B. ANGGOTA PENGUSUL 1

Nama	ARIE LINARTA S.Kom, M.Kom
NIDN/NIDK	1003128301
Pangkat/Jabatan	-/Lektor
E-mail	arie.linarta83@gmail.com
ID Sinta	6657926
h-Index	1

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No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)

Publikasi di Jurnal Nasional Terakreditasi Peringkat 1 dan 2

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)
1	SPK PEMILIHAN BANTUAN BEDAH RUMAH PADA KELURAHAN PURNAMA MENGGUNAKAN METODE SAW		JISKA (JURNAL INFORMATIKA SUNAN KALIJAGA), 2019, 4, 1, 2528-0074	http://ejournal.uin-

Prosiding seminar/konverensi internasional terindeks

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)

Buku

No	Judul Buku	Tahun Penerbitan	ISBN	Penerbit	URL (jika ada)

Perolehan KI

No	Judul KI	Tahun Perolehan	Jenis KI	Nomor	Status KI (terdaftar/granted)	URL (jika ada)
1	SMS Auto Response Layanan Kunjungan RUTAN Kelas II-B Dumai	2016	Hak Cipta		Terdaftar	https://e-hakcipta.d

C. ANGGOTA PENGUSUL 2

Nama	UCI RAHMALISA S.Kom, M.Ti
NIDN/NIDK	1010108902
Pangkat/Jabatan	-/Lektor
E-mail	ucirahmalisa89@gmail.com
ID Sinta	6134741
h-Index	2

Publikasi di Jurnal Internasional terindeks

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)
1	Car parking distance controller using ultrasonic sensors based on arduino uno	corresponding author	Journal of Robotics and Control (JRC), 2021, 2, 5, 2715-5072	https://journal.umy.
2	Detector leakage gas LPG based on telegram notification using wemos D1 and MQ-6 sensor	first author	Journal of Robotics and Control (JRC), 2021, 2, 4, 2715-5072	https://journal.umy.
3	Home security alarm using wemos D1 and HC-SR501 sensor based telegram notification	corresponding author	Journal of Robotics and Control (JRC), 2021, 2, 3, 2715-5072	https://journal.umy.
4	Multi-criteria decision making on succesfull of online learning using AHP and regression	co-author	Journal of Physics: Conference Series, 2019, 1175, 1, -	https://iopscience.i

Publikasi di Jurnal Nasional Terakreditasi Peringkat 1 dan 2

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)
1	Aplikasi Sistem Pemberian Reward Berdasarkan Kinerja Karyawan dengan Metode Analytical Hierarchy Process (Ahp) pada Toko Golden Jaya Star Pekanbaru		JTOS (Jurnal Teknologi dan Open Source), 2019, 2, 1, E-ISSN 2622-1659	http://ejournal.unik

Prosiding seminar/konverensi internasional terindeks

No	Judul Artikel	Peran (First author, Corresponding author, atau co-author)	Nama Jurnal, Tahun terbit, Volume, Nomor, P-ISSN/E-ISSN	URL artikel (jika ada)

Buku

No	Judul Buku	Tahun Penerbitan	ISBN	Penerbit	URL (jika ada)

Perolehan KI

No	Judul KI	Tahun Perolehan	Jenis KI	Nomor	Status KI (terdaftar/granted)	URL (jika ada)

1	Sistem Database Pemasyarakatan Studi Kasus Lapas Kelas II A Pekanbaru	2019	Hak Cipta		Terdaftar	https://s.id/t0ooU
2	Aplikasi E-Report Untuk Laporan Kehilangan Pada Polsek Bukit Raya	2020	Hak Cipta		Terdaftar	https://s.id/t0pdE
3	Aplikasi Pengukur Tinggi Dan Berat Badan Otomatis Dilengkapi Sistem Database Terintegrasi	2021	Hak Cipta	000296431	Granted	https://drive.google
4	Karya Ilmiah Automatic Height And Weight Measurement Integrated Database	2022	Hak Cipta	EC00202203173	Granted	https://drive.google
5	Karya Ilmiah Design Of Microcontroller Programming Learning KIT Using Scratch For Arduino	2022	Hak Cipta	EC00202203170,	Granted	https://drive.google

PERSETUJUAN USULAN

Tanggal Pengiriman	Tanggal Persetujuan	Nama Pimpinan Pemberi Persetujuan	Sebutan Jabatan Unit	Nama Unit Lembaga Pengusul
11 Februari 2022	12 Februari 2022	Dr. ARBI HAZA NASUTION B.IT, M.I.T	Direktur Direktorat Penelitian dan Pengabdian kepada Masyarakat	Direktorat Penelitian dan Pengabdian kepada Masyarakat

Direktorat Riset dan Pengabdian Masyarakat Direktorat Jenderal Riset dan Pengembangan
Kementerian Riset, Teknologi, dan Pendidikan Tinggi
Gedung BPPT II Lantai 19, Jl. MH. Thamrin No. 8 Jakarta Pusat
https://simlitabmas.ristekdikti.go.id/

LAPORAN AKHIR PENELITIAN MULTI TAHUN

ID Proposal: 8df2c34b-78fa-4cb4-9f61-d605153e7a79
laporan akhir Penelitian: tahun ke-1 dari 3 tahun

1. IDENTITAS PENELITIAN

A. JUDUL PENELITIAN

ROBOT EVOCE SEBAGAI UPAYA MENINGKATKAN KEMAMPUAN VOCABULARY PADA ENGLISH FOR YOUNG LEARNERS

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

Bidang Fokus RIRN / Bidang Unggulan Perguruan Tinggi	Tema	Topik (jika ada)	Rumpun Bidang Ilmu
Teknologi Informasi dan Komunikasi	-		Pendidikan Bahasa (dan Sastra) Inggris

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	2	3

2. IDENTITAS PENGUSUL

Nama (Peran)	Perguruan Tinggi/ Institusi	Program Studi/ Bagian	Bidang Tugas	ID Sinta	H-Index
SRI YULIANI - Ketua Pengusul	Universitas Islam Riau	Pendidikan Bahasa Inggris	1. Bertanggung jawab pada proses penelitian 2. Memeriksa dan membantu proses penelitian dari awal	5981384	1

			sampai akhir 3. Memeriksa dan pembuatan isi laporan dan kesimpulan penelitian 4. Bertanggung jawab atas hasil penelitian 5. Memeriksa analisis kebutuhan dan desain 6. Memberikan pelatihan penggunaan Robot 7. Membantu proses analisa data dan Evaluasi 8. Mengolah data menggunakan SPSS 9. Interpretasi hasil evaluasi		
UCI RAHMALISA - Anggota Pengusul	Universitas Hang Tuah Pekanbaru	Sistem Informasi	1. Membantu ketua peneliti selama penelitian berlangsung 2. Membantu menyelesaikan laporan hingga selesai 3. Konsentrasi pada analisis dan perancangan sistem 4. Membantu dan mengarahkan coding selama peneltiian sesuai dengan analisis dan perancangan 5. Mendampingi ketua dalam memberikan pelatihan	6134741	4
ARIE LINARTA - Anggota Pengusul	STMIK Dumai	Sistem Informasi	1. Bertanggung jawab pada proses penelitian 2. Memeriksa dan membantu proses penelititan dari awal sampai akhir 3. Memeriksa dan pembuatan isi laporan 4. Merancang dan membangun Robot EVOCE	6657926	1

			5. Membuat dan mengarahkan coding selama penelitian 6. Membuat buku ajar 7. Memberikan pelatihan penggunaan Robot 8. Mendampingi ketua dalam memberikan pelatihan		

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

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	Language Learning & Technology (LLT)
1	Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi	Submited	Language Learning & Technology (LLT)
2	Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi		Language Learning & Technology (LLT)
3	Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi		Language Learning & Technology (LLT)

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)*
1	Paten		Protipe Robot EVOCE

	produk		
2	Program komputer		Robot EVOCE
3	Program komputer		Robot EVOCE

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 3 Tahun Rp. 0

Tahun 1 Total Rp. 0

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total

Tahun 2 Total Rp. 0

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total

Tahun 3 Total Rp. 0

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Biaya Satuan	Total

6. KEMAJUAN PENELITIAN

A. RINGKASAN

Pembelajaran bahasa asing berbantuan robot merupakan salah satu bagian integral dari Technology Enhanced Language Learning mendapatkan banyak perhatian seiring dengan perkembangan teknologi pengenalan suara dan sintesis. Dalam beberapa tahun terakhir, pendekatan pembelajaran bahasa asing lebih menekankan pada interaksi manusia- robot untuk menciptakan pengaturan kontekstual untuk pembelajaran bahasa yang lebih interaktif dan otentik, terutama untuk melibatkan English for young learners. Contoh pengaturan seperti itu adalah menggunakan skenario nyata bagi robot untuk berinteraksi dengan English for young learners dengan penggunaan robot untuk membuat gerakan sehingga perhatian peserta didik terfokus.

Permasalahan yang pertama pada English for young learners adalah fokus dan konsentrasi belajar, sementara kita mengetahui anak- anak pada usia ini lebih banyak bermain dan sangat aktif. Sehingga ketika guru akan menyampaikan konten pembelajaran, mereka lebih banyak bergerak dan bermain. Permasalahan yang kedua adalah keberagaman variasi media pembelajaran yang harus dipersiapkan guru bahasa asing untuk English for young learners sehingga penguasaan vocabulary mudah dihapal. Permasalahan ketiga adalah lingkungan pembelajaran yang kurang kondusif dimana handphone dan gadget lebih sering digunakan oleh English for young learners selama masa pembelajaran daring ketika musibah Covid-19 merebak sehingga dampak psikologis sangat mempengaruhi penguasaan bahasa

asing. Permasalahan keempat adalah pembelajran interaktif yang dirasa perlu dikembangkan di tahap English for young learners.Target luaran untuk mengatasi permasalahan yang ada diatas akan diciptakan media pembelajaran interaktif berupa Robot yang diberi nama Robot EVOCE (English Vocabulary for Children).

Penelitian ini bertujuan untuk menciptakan alternatif media pembelajaran yang interaktif dengan memanfaatkan robot berbasis Prototyping Method. Pada penelitian ini pertama anak akan menggunakan Robot dalam pembelajaran Bahasa Inggris dengan mengajak anak berkolaborasi dengan melakukan instruksi pada robot untuk melakukan suatu aktivitas pembelajaran (pengenalan angka, huruf, dan gambar serta bunyi (pronunciation)) yang mengarah kepada pengenalan vocabulary bahasa Inggris sehingga menarik minat anak English for young learners untuk belajar membaca, mengucapkan dan meniru vocabulary Bahasa Inggris. Kedua, English for young learners dapat mengikuti pembelajaran baik secara individu maupun berkelompok, sehingga mampu meningkatkan kemampuan interaksi sosial anak.

Metode Prototyping digunakan dalam penelitian ini bertujuan untuk mendapatkan gambaran Robot yang akan dirancang dan dibangun yang kemudian dievaluasi oleh user. Prototype yang dievaluasi oleh user selanjutnya akan dijadikan acuan untuk membuat Robot yang dijadikan produk akhir sebagai output dari penelitian ini. Robot ini dibangun dengan Arduino Uno yang dijalankan dengan perintah Bahasa C, berbasis mikrokontroller dan sensor yang digunakan sebagai media input. Luaran penelitian ini berupa model/rancangan kegiatan prototipe robot EVOCE untuk pengajaran Vocabulary khusus English for young learners.

Perencanaan penelitian tahun 2022 yaitu model rancanganan protoptipe Robot EVOCE (English Vocabulary for Children) dimulai dari analisis kebutuhan sistem dengan mencari studi literature yang sesuai selanjutnya pemilihan microkontroler, sensor, Arduino Uno yang akan digunakan. Tahun 2023, perancangan sistem Robot EVOCE dengan mengembangkan Model Robot EVOCE dilakukan Pre-Test. Objek penelitian setelah menggunakan Robot EVOCE dan selanjutnya evaluasi hasil penggunaan Robot EVOCE. Tahun 2024, Robot EVOCE untuk pembelajaran yang akan diproduksi dan digunakan secara massal dengan bekerjasama dengan Sekolah Dasar untuk mengembangkan produk ini. Selanjutnya Robot EVOCE ini bisa digunakan di bidang pendidikan untuk membantu pembelajaran Vocabulary bahasa asing khususnya Bahasa Inggris English for young learners.

B. KATA KUNCI

EVOCE Robot, English for Young Learners, Vocabulary, Prototyping

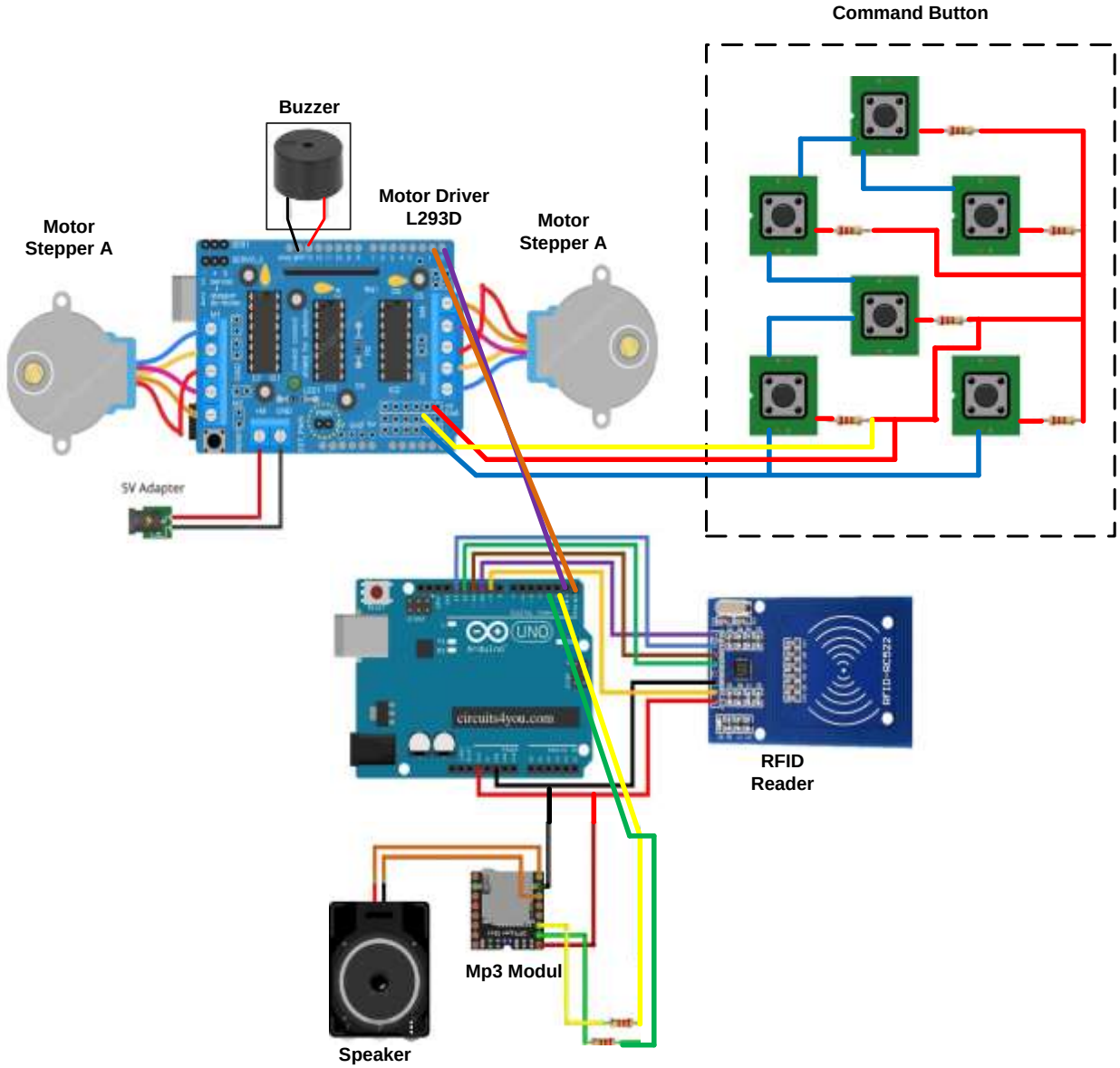
Pengisian poin C sampai dengan poin H mengikuti template berikut dan tidak dibatasi jumlah kata atau halaman namun disarankan seringkas mungkin. Dilarang menghapus/memodifikasi template ataupun menghapus penjelasan di setiap poin.

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.

Jenis penelitian yang digunakan adalah rancang bangun dengan model *prototype*. Model *protoype* Robot Evoce dibangun melalui tahapan analisis kebutuhan rancangan, desain, pembuatan produk, uji coba, validasi dan implementasi sistem.

1.1. *Penentuan Spesifikasi Rancangan*

Secara garis besar sistem robot pada penelitian ini terdiri dari beberapa rangkaian elektronik yang dapat dikelompokkan menjadi 3 blok bagian utama, yakni blok input, proses, dan output. Untuk lebih jelasnya dapat dilihat pada gambar dibawah ini :



Gambar 1. Rangkaian Prototype Robot Evoce

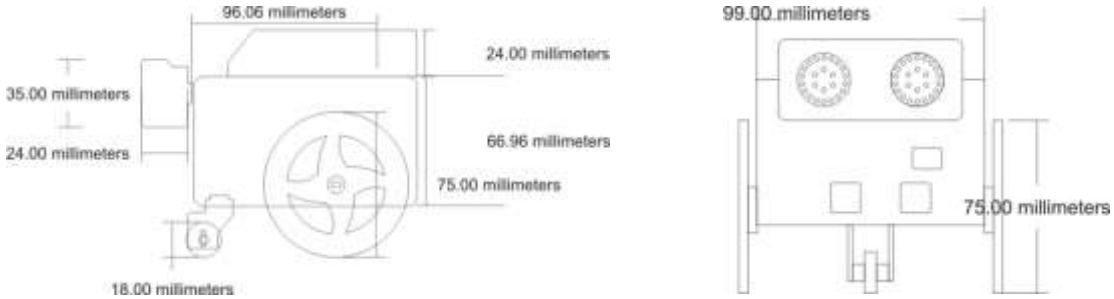
Pada rangkaian sistem diatas terdapat 2 jenis media input yaitu tombol perintah, dan sensor RFID. Tombol perintah berfungsi sebagai media interaksi antara pengguna dengan robot, sedangkan sensor RFID merupakan sensor yang nantinya berfungsi untuk mengenal atau mendeteksi gambar pada matras berdasarkan Nomer ID pada matras tersebut.

a. Blok Proses

Blok proses terdiri dari rangkaian papan microcontroller arduino sebagai unit pemproses atau pengendali utama pada rangkaian. Dalam penelitian ini board microcontroller arduino yang digunakan sebanyak dua buah board microcontroller, masing-masing board menjalankan fungsi khusus yaitu satu digunakan untuk memproses perintah dan menjalankan perintah yang diinput oleh pengguna. Sedangkan board yang lainnya berfungsi untuk memproses input dari sensor RFID yang kemudian memvalidasi Nomer ID sesuai dengan file suara yang diinginkan.

b. Blok Output

Output atau keluaran dari sistem robot evoke ini adalah berupa gerakan robot dari satu titik ketitik lainnya, dan mampu menghasilkan suara dalam bahasa inggris sesuai dengan gambar matras yang terdeteksi melalui Nomer ID. Prototype ini dapat digunakan sebagai media pembelajaran bahasa inggris khususnya dalam pengenalan kosakata.



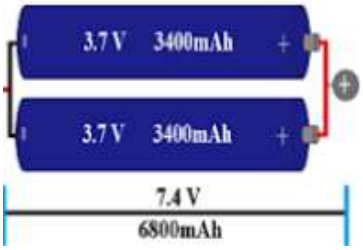
Gambar 2. Ukuran Robot Evoce

1.2. *Perancangan* perangkat keras

Rangkaian yang digunakan dalam perancangan *hardware* antara lain adalah :

a. Power supply

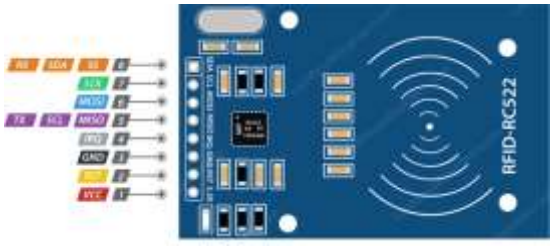
Robot evoce ini menggunakan batrei li ion dengan tipe 18650 3.7 volt. Jumlah batteri yang digunakan sebanyak 3 buah dua dihubungkan secara seri berfungsi sebagai suplay daya ke microcontroller. Sedangkan 1 buath batrei murni untuk mensuplay daya pada speaker.



Gambar 3. Rangkaian batrei power supplay robot evoke.

b. Sensor

Sensor yang digunakan untuk mendeteksi code pada matras adalah RFID tipe RC522. Fungsi sensor adalah untuk membaca Nomer ID pada *tag* sticker RFID yang dipasang pada matras, sehingga robot mampu mengidentifikasi kode suara yang akan dimainkan sesuai dengan gambar yang ada pada matras tersebut.



Gambar 4. RFID RC522

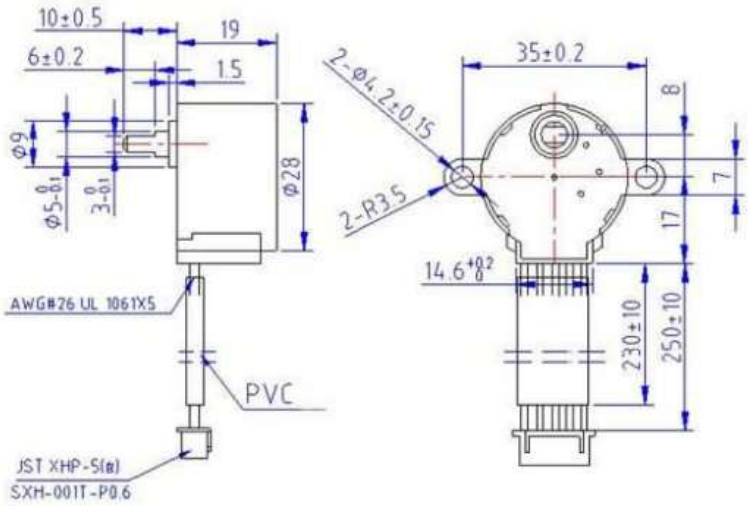
c. Mekanis

Sistem penggerak roda robot menggunakan motor stepper. Penggunaan motor stepper bertujuan untuk

memudahkan pengendalian jarak tempuh robot dengan menghitung jumlah step (langkah) pada motor tersebut, selain itu juga memudahkan arah putaran robot dengan sudut putaran 90 derajat.

Gambar 5. Motor Stepper

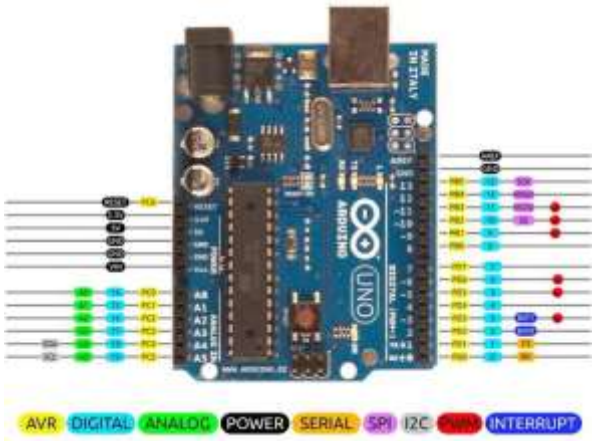
Deskripsi motor stepper
Nilai Tegangan : 5VDC
Jumlah Phasa : 4 Speed Variation Ratio 1/64
Sudut langkah per setp : 5.625° /64



Gambar 6. Ukuran dan dimensi Motor Stepper

d. Pengendali

Sebagai rangkaian pengendali robot, pada penelitian ini menggunakan board microcontrollet Arduino uno r3. Hanya saja jumlah board arduino yang digunakan sebanyak 2 buah. Satu buah board arduino digunakan sebagai pengendali penggerak atau mekanis robot, sedangkan yang satunya lagi sebagai pengendali sensor RFID dan Modul Suara.



Gambar 7. Board Arduino uno r3

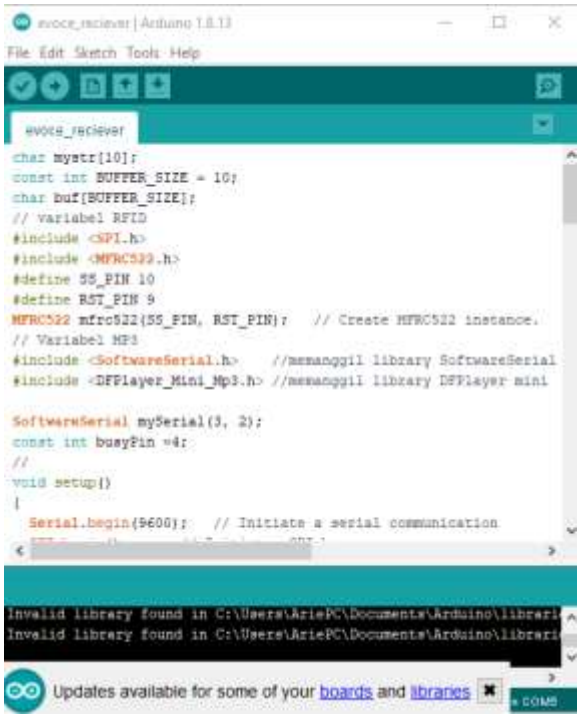
Tabel . 1 Jenis PIN dan Fungsi pada Arduino Uno R3
Sumber : www.arduino.cc

Kategori PIN	Nama PIN	Detail
Kekuatan	Vin, 5V, 3.3V, GND	Vin: Input tegangan ke Arduino ketika menggunakan sumber daya eksternal. 5V: Catu daya yang digunakan untuk board miktrokontroler. 3.3V: Tegangan yang dihasilkan oleh regulator on-board. GND: Ground
Reset	Reset	Mengatur ulang miktrokontroler
PIN Analog	A10-A5	Untuk memberikan input analog sekitar 0-5V
PIN Input/Output	PIN digital 0-13	Dapat digunakan sebagai PIN input atau output
Serial	0 (RX), 1 (TX)	Untuk menerima atau transmisi data serial TTL
Interupsi Eksternal	2, 3	Sebagai pemicu interupsi
PWM	3, 5, 6, 9, 11	Memasok 8-bit PWM output
SPI	10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK)	Sebagai komunikasi SPI
LED	13	Untuk mengaktifkan lampu LED
TWI	A4 9SDA), A5 (SCA)	Sebagai komunikasi TWI
AREF	AREF	Memberikan tegangan acuan pada output

1.3. Perancangan Perangkat lunak

Arduino IDE adalah software yang digunakan untuk membuat *sketch* pemrogaman atau dengan kata lain ***arduino IDE*** sebagai media untuk pemrogaman pada microcontroller arduino. Penulisan code/ program melalui Arduino IDE menggunakan bahasa C. Program yang ditulis pada perangkat arduino ini memiliki fungsi sebagai berikut :

a. *Sebagai pengendali mekanis penggerak robot, dalam hal ini penggerak menggunakan mekanis dari motor stepper, sekaligus menerima input dari pengguna melalui tombol perintah yang telah disediakan. Adapun perintah pada tombol berfungsi untuk menggerakkan robot kedepan, kebelakang, putar kiri, dan putar kanan.*
b. *Code/ program yang ditulis pada board microcontroller arduino yang kedua berfungsi untuk membaca Nomer ID yang ada pada matras, kemudian memainkan file .mp3 yang sesuai dengan Nomer ID yang diperolah.*



Gambar 8. Arduino IDE

1.4. Validasi

Pada tahap ini akan dilakukan validasi alat secara keseluruhan agar dapat mengetahui apakah tiap modul dapat bekerja sesuai dengan fungsinya ketika diintergrasikan dengan modul lainnya.

Tabel 2. Kisi-kisi Instrument Pengujian Validasi

No	Variabel	Data
1	Sistem Penggerak (Maju dan Mundur)	Validasi Jarak tempuh
2	Sistem penggerak (Kiri, dan Kanan)	Validasi Putaran 90^0
3	Pembacaan tag RFID	Validasi Sensor
4	Memainkan file suara format .mp3	Validasi Modul Suara

Untuk menguji kelayakan validasi dari seluruh variabel dapat menggunakan rumus :

Rumus Relatif Error %=$\frac{Absolute\ Error}{Actual\ Value}$x 100

Keterangan :

Absolute Error = Nilai pada prototype

Actual Error = Nilai Real hasil pengujian

Interpretasi nilai kelayakan kesalahan relative (%) yang digunakan :

0 – 25 = Sangat Baik

25 – 50 = Baik

50 – 75 = Tidak Baik

75 -100 = Sangat Tidak Baik

2. Hasil dan Pembahasan

Penulis merancang sebuah robot yang diberi nama EVoce. Robot ini digunakan untuk mengasah logika berfikir anak usia dini sambil mengenal dan mengucapkan kosakata dalam bahasa inggris. Robot di program untuk bergerak maju, mundur, berputar ke kiri, atau berputar kekakan melalui tombil perintah yang telah disediakan. Ketika robot sudah menjalan perintah untuk berpindah dari satu kotak ke kotak maka sensor RFID pada robot akan diaktifkan untuk membaca Nomer ID pada matras dimana posisi robot berhenti. Robot akan menampilkan suara dalam bahasa inggris sesuai dengan gambar matras dibawah nya dengan mengidentifikasi file suara berdasarkan Nomer ID yang terbaca.

Gambar 9. Tampilan Prototipe Robot Evoce

Prototipe robot evoce ini digunakan sebagai media pembelajaran bahasa inggris dalam pengenalan vocabulary pada anak usia dini, sekaligus mengasah logika berfikir anak dengan memprogram robot secara sederhana. Model pembelajaran ini salah satu model pembelajaran yang dapat diimplementasikan pada metode pembelajaran berbasis STEM (*Sains, Teknologi, Enginering dan Matematik*).

2.1. Hasil Uji Coba

Beberapa pengujian dilakukan diantaranya adalah pengujian sistem penggerak robot, pengujian modul sensor RFID, dan pengujian modul suara. Pengujian sistem secara keseluruhan dilakukan untuk mengetahui apakah sistem prototype robot ini telah bekerja dengan baik. Pada kondisi awal penggunaan robot, pengguna dapat menekan tombol clear (tombol bewarna merah) untuk mengosongkan memory robot, kemudian pengguna dapat memprogram pergerakan robot dengan memberikan perintah maju (tombol biru atas), mundur (tombol biru bawah), belok kiri(tombol putih sebelah kiri), dan belok kanan (tombol putih sebelah kanan). Setelah mengisi sederetan perintah melalui tombol tadi, langkah selanjutnya adalah menekan tombol hijau untuk menjalankan robot. Robot akan bergerak sesuai dengan perintah yang telah deprogram sebelumnya, dan saat robot berhenti maka robot akan menscace Nomer ID pada matras yang berada tepat dibawah robot untuk mendeteksi Nomer ID agar dapat memainkan file suara sesuai dengan Nomer ID yang diperoleh. Berikut tabel hasil uji fungsi robot evoce :

Tabel 3. Tabel Hasil Instrument Functionality

No	Requirement yang diuji	Butir Uji	Hasil Uji	
			Ya	Tidak
1	Arduino 1	Apakah perintah dapat tersimpan ke memory EEPROM?	✓	
2	Arduino 1	Apakah data pada memory EEPROM dapat dibaca kembali setelah menekan tombol hijau ?	✓	
3	Arduino 1	Apakah data pada memory EEPROM terhapus setelah menekan tombol Merah?	✓	
4	Arduino 2	Apakah modul sensor dapat mendeteksi Nomer ID?	✓	
5	Arduino 2	Apakah file suara .mp3 dapat ditampilkan pada speaker?	✓	
6	Stepper Kiri	Apakah motor stepper bergerak sesuai dengan arah putaran yang telah deprogram ?	✓	
7	Stepper kanan	Apakah motor stepper bergerak sesuai dengan arah putaran yang telah deprogram ?	✓	
8	Gerak Maju dan Mundur	Apakah prototype robot dapat bergerak maju dan mundur ?	✓	
9	Belok kiri dan kanan	Apakah prototype robot dapat berputar ke kiri atau kekanan dengan sudut putaran 90^0	✓	

Dari hasil validasi functionality pada tabel …. , presentase nilai kesalahan dapat dihitung dengan menggunakan persamaan :

$$\text{Error \%} = \frac{9-9}{9} \text{x } 100\% = 0\ \%$$

Sehingga dengan demikian berdasarkan hasil uji validasi fungsional dapat dikategorikan berfungsi dengan sangat baik. Pada uji belok kiri dan kanan memang robot tidak presisi 90^0 arah putaranya, namun saat bergerak maju atau mundur prototype robot tidak keluar dari kotak matras yang berukuran 20 x 20 cm, sehinga disimpulkan bahwa robot bergerak kearah kiri atau kanan dengan tingkat presisi yang masih dapat ditolerir.

2.2. Pengujian sistem penggerak robot

Pengujian sistem penggerak ini dilakukan untuk memastikan bahwa penggerak robot dapat diprogram dan mampu berjalan sesuai dengan urutan program yang telah diinput kedalam memory EEPROM. Berikut tabel pengujian sistem penggerak robot Evoce :

Tabel 4. Pengujian Sistem Penggerak Robot

No	Urutan Perintah	Gerakan Motor		Gerak Prototipe Robot
		Motor Kiri	Motor Kanan	
1		CW	CCW	Bergerak Maju
2		CCW	CW	Bergerak Mundur
3		CW	CW	Bergerak memutar ke kanan
4		CCW	CCW	Bergerak memutar ke kiri

Berdasarkan data uji coba yang diperoleh maka dapat disimpulkan bahwa sistem penggerak prototype robot sudah dapat bekerja sesuai dengan fungsi dan perintah yang telah ditentukan. Untuk bergerak maju maka motor kiri berputar searah jarum jam (CW) dan motor kanan berputar berlawan arah jarum jam (CCW). Kemudian untuk bergerak mundur motor kiri bergerak berlawanan arah jarum jam (CCW), dan motor kanan bergerak searah jarum jam (CW). Setelah itu jika prototype ingin bergerak kearah kanan maka motor kiri dan kanan berputar searah jarum jam (CW) dan sebaliknya untuk berputar kekiri motor kiri dan kanan berputar berlawan arah jarum jam (CCW).

2.3. Pengujian Modul Suara

Pengujian module suara (DF player mini) dilakukan agar mengetahui tegangan yang dikeluarkan ketika module DF player mini memutar suara rekaman yang ada pada SD Card memori dalam mengukur tegangan peneliti akan menggunakan multitester digital. Hasil dan gambar pengujian dapat dilihat seperti pada tabel dibawah ini, seperti pada tabel ….

Tabel 5. Pengujian Modul Suara (DFPlayer mini)

Uji Coba Ke-	Status Modul DFPlayer mini	Lama Memutar	Tegangan (V)	Keterangan
1	Tidak mendapat Input	0 detik	0.088	DF Player Off
2	Mendapat Input	5 detik	0.694	DF Player On

Dari hasil pengujian module DF player mini dapat diketahui jika df player mini melakukan pemutaran mp3 maka tegangan yang dihasilkan saat sedang memutar mp3 adalah sebesar 0.694volt.

2.4. Pengujian Sensor RFID RC522

Pengujian RFID Card dilakukan menggunakan sensor pancaran frekuensi gelombang elektromagnetik yang dikeluarkan dari RFID reader RC522. Percobaan kali ini menggunakan 2 kartu RFID card yang salah satunya dapat diterima dan ditolak melalui deteksi RFID card dengan memverifikasi nomer ID yang sudah didapatkan maka salah satunya akan dimasukan ke program *source code* keseluruhan alat. Pengujian RFID card dengan cara menempelkan salah satu kartu nya didekatkan dengan RFID reader rc522 sekitar jarak 1-3 cm. Pengujian pertama yang harus dilakukan adalah dengan melakukan pembacaan deteksi kartu RFID yang diterima oleh RFID Reader. Cara mendapatkan nomor ID yang tersimpan dari kartu RFID card adalah dengan menjalankan program di IDE Arduino melalui sampel yang diberikan dari sumber penjualan RFID card yang telah memberikan library khusus untuk uji coba RFID card tersebut. Pin yang tersambung ke

arduino dan dimuat dalam program IDE Arduino sudah ditetapkan bahwa pin D10 sebagai SS (Software Serial) dan pin D9 sebagai Reset pin. Ini dilakukan untuk menguji apakah kartu RFID card dapat terdeteksi di serial monitor dengan menempelkan kartu RFID ke RFID Reader. Setelah memperoleh nomer ID pada kartu langkah selanjutnya adalah membuat logika pembanding dengan membandingkan nomer ID yang diperoleh dengan data nomer ID yang ada pada program. Jika nomer ID ditemukan maka suara file .mp3 akan dimainkan melalui modul DFPlayer mini, sedangkan jika nomer ID tidak ditemukan maka sistem tidak melakuan respon apapun. Berikut tabel sampel uji RFID :

Tabel 6. Pengujian sensor RFID RC522

No	Nomer ID	Kondisi	Aksi
1	24 BD 27 CD	Ditemukan	File suara 0001.mp3 dimainkan
2	81 B4 E0 26	Ditemukan	File suara 0002.mp3 dimainkan
3	E5 D2 98 EE	Tidak Ditemukan	No Respond

2.5. Pembahasan

Prototype robot evoce ini menggunakan motor stepper 28byj-48 5 volt sebagai mekanis penggerak robot dengan motor driver l293d sebagai driver pengendali motor. Sumber tenaga yang digunakan adalah melalui batrei li-ion tipe 18650 3.7 volt sebanyak 3 buah. 2 buah digunakan untuk mensupplay daya pada rangkaian microcontroller dan motor penggerak, sedangkan 1 buah khusus digunakan untuk mensuplay tegangan pada speaker. Board microcontroller yang digunakan adalah seri board Arduino Uno R3 sebagai sistem pengendali robot.

Berdasarkan rancangan robot yang telah dibuat, dilakuan pengujian untuk mengukur kinerja seluruh rangkaian modul yang ada pada prototype robot evoce ini. Pada awal prototype robot evoce ini digunakan, pengguna dapat menginput perintah melalui tombol yang tersedia pada bagian atas robot. Prototype robot evoce dapat dijalankan dengan menekan tombol bewarna hijau, sehingga robot akan bergerak sesuai dengan urutan perintah yang telah diinput sebelumnya. Setelah robot berhenti atau seluruh perintah sudah dieksekusi maka robot akan menscan tag sticker RFID yang ada pada matras untuk memainkan file suara sesuai dengan Nomer ID yang diperoleh.

Dari hasil pengujian yang dilakuan robot dapat menyimpan dan menjalankan perintah sesuai dengan input yang diterima dan mampu memainkan file suara dalam format .mp3 untuk memberikan contoh pengucapan *vocabulary* dalam bahasa inggris yang baik dan benar.

3. Kesimpulan

Berdasarkan hasil penelitian dapat disimpulkan bahwa, prototype robot evoce yang dirancang menggunakan board arduino uno r3 yang dihubungkan ke rangkaian tombol perintah dan sensor rfid sebagai media input untuk mengidentifikasi Nomer ID pada matras, serta menggunakan motor stepper sebagai mekanis penggerak robot dan DFPlayer mini untuk menghasilkan output suara dalam format .mp3. Pada hasil pengujian keseluruhan modul dapat disimpulkan bahwa, komponen prototype robot evoce ini dapat berfungsi dengan baik dan semua komponen bekerja sesuai dengan input dan output yang diharapkan. Menggunakan mekanis penggerak dari motor stepper dapat memudahkan prototype robot evoce bergerak secara presisi baik bergerak maju, mundur, belok kekiri ataupun kekanan. Sensor RFID RC522 juga mampu mengeidentifikasi Nomer ID yang dipasang pada bagian bawah matras. File suara yang dihasilkan dari modul DFPlayer juga dapat dimainkan sesuai dengan Nomer ID yang diperoleh dari hasil scan, sehingga suara yang muncul sesuai dengan objek yang dibaca. Berdasarkan hasil uji fungsionalitas yang telah dilakukan seluruh rangkaian modul pada prototype robot evoce ini memperoleh nilai error sebesar 0% sehingga dapat dikatakan bahwa prototype robot evoce masuk dalam kategori sangat baik. Diharapkan pada penelitian tahap selanjutnya, rangkaian microcontroller robot dapat dibuat semini mungkin sehingga ukuran robot dapat diperkecil lagi. Selain itu pada sistem penggerak robot sebaiknya menggunakan *gearbox* sehingga mampu meningkatkan RPM motor stepper. Harapannya dengan desain robot yang lebih kecil dan kecepatan pergerakan robot yang meningkat dapat menjadikan protype robot evoce ini sebagai produk unggulan dalam pembelajaran pengenalan *vocabulary* pada anak usia dini.

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 mengunggah bukti dokumen ketercapaian luaran wajib dan luaran tambahan melalui BIMA.

Luaran wajib dari hibah PDKN ini berupa publikasi Jurnal dan status berupa submit. Screen shoot status submit dibawah ini:

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

Di Penelitian ini tidak ada mitra.

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 yang dihadapi para peneliti adalah:

1. Publikasi luaran jurnal di proposal sepertinya belum bisa dipenuhi pada saat melaporkan laporan kemajuan dengan kondisi bahwa jurnal yang dirujuk merupakan jurnal pengajaran scopus Q1 (LLT Journal) dan kondisi waktu yang singkat, sementara hasil penelitian pada tahun pertama ini baru merupakan protipe robot sehingga para peneliti akan mencari jurnal prototipe robot dan diusahakan secepatnya untuk searching sesuai dengan scope artikel.
2. Mengingat hal di atas kami para peneliti akan berusaha secepatnya mencari jurnal yang sesuai dan semoga secepatnya akan kami submit dengan mengikuti guidelines submission jurnal.

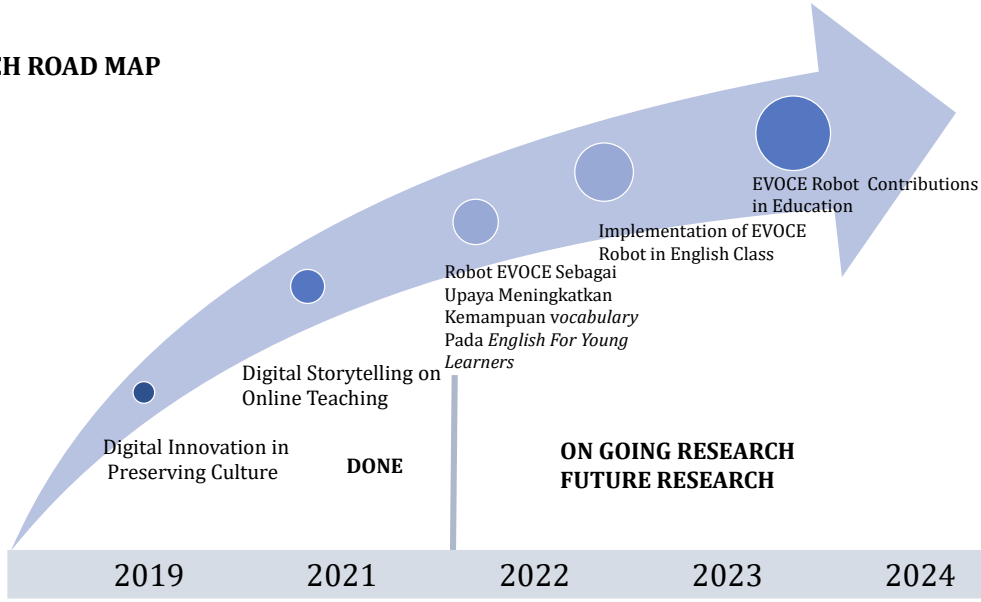
G. **RENCANA TAHAPAN SELANJUTNYA:** Tuliskan dan uraikan rencana penelitian di tahun berikutnya berdasarkan indikator luaran yang telah dicapai, rencana realisasi luaran wajib yang dijanjikan dan tambahan (jika ada) di tahun berikutnya serta *roadmap* penelitian keseluruhan. Pada bagian ini diperbolehkan 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.

Tahun 2023, langkah pertama adalah menganalisa ulang feasibility terhadap hasil perancangan sistem Robot EVOCE dengan mengembangkan Model Robot EVOCE selanjutnya tahap kedua berupa perancangan revisi sistem dan pembuatan ulang prototipe sistem serta pembuata ulang Robot EVOCE. Tahap ketiga berupa Simulasi sistem terbarukan. Tahap keempat berupa Implementasi Robot EVOCE di SD IT Az-Zuhra dilakukan Pre-Test. Objek penelitian setelah menggunakan Robot EVOCE dan selanjutnya evaluasi hasil penggunaan Robot EVOCE. Pada tahapan ini rencana tahapan selanjutnya adalah melaksanakan penelitian untuk tahun kedua yang akan dilaksanakan tahun 2023. Pelaksanaan penelitian akan di laksanakan di SD IT Al Islam Az- Zuhra, yang terdiri dari dua kelas yaitu : kelas 1A sebagai kelas eksperimen dan kelas 1B sebagai kelas kontrol. Jumlah siswa kelas 1A sebanyak 20 siswa begitu pula kelas 1B. Setelah diperoleh data penelitian langkah berikutnya mengolah data hasil penelitian. Data yang diperoleh berupa hasil belajar, data observasi tentang implementasi EVOCE Robot. Langkah-langkah yang ditempuh setelah memperoleh data hasil belajar (postest) meliputi uji normalitas dan uji kesamaan dua varian. Selanjutnya setelah diketahui data yang diperoleh berdistribusi normal maka dilakukan uji hipotesis. Tahap kelima pelatihan lanjutan bagi mitra. Tahap keenam monitoring dan evaluasi. Tahap selanjutnya pemenuhan luaran wajib dan tambahan penelitian dan terakhir pelaporan hasil. Setelah melakukan analisis data penelitian, kegiatan selanjutnya menyusun laporan hasil penelitian dalam bentuk artikel penelitian yang akan dimasukkan dalam jurnal Scopus Q1 yaitu jurnal Ilmiah Kependidikan “LLT Journal”. Rincian kegiatan yang akan dilaksanakan tahap berikutnya meliputi:

Tahun ke-2

No	Nama Kegiatan	Bulan											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Analisis feasibility study sistem Robot EVOCE tahun pertama	x											
2	Perancangan Revisi sistem	x	x										
3	Pembuatan ulang prototipe sistem		x	x									
4	Pembangunan ulang Robot EVOCE		x	x	x	x	x						
5	Simulasi sistem terbarukan							x					
6	Implementasi Robot EVOCE di SD IT Az-Zuhra							x	x				
7	Pelatihan lanjutan bagi mitra									x			
8	Monitoring dan evaluasi							x	x	x	x		
9	Pemenuhan luaran wajib dan tambahan penelitian							x	x	x	x	x	
10	Pembuatan feasibility study sistem untuk tahun berikutnya											x	
11	Pelaporan hasil												x

RESEARCH ROAD MAP



Research Road Map from 2019 to 2024

Gambar 1: Road Map Penelitian

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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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Research Article

EVOCE Robot: Developing Prototypes and Teaching Young Learners English Vocabulary

Sri Yuliani [1], Arie Linarta [2], Uci Rahmalisa [3], and Shalawati [1]

[1]*Universitas Islam Riau, sriyuliani@edu.uir.ac.id*
[2]*STMIK Dumai, arie.linarta83@gmail.com*
[3]*Universitas Hangtuah, ucirahmalisa89@gmail.com*
[1]*Universitas Islam Riau, shalawati@edu.uir.ac.id*

Abstract

This study aimed to find out the prototype of an EVOCE robot that gave impact of students' English vocabularies enhancement. In this study the authors used two types of research design namely prototyping method and experiment research design. Mixed method applied in this research qualitatively and quantitatively. Both vocabulary tests and observational methods of prototyping data collection were employed. The robot prototype used in the class as a tool to examine how was the effect of this media helped young learners in acquiring basic English vocabulary. The prototype has been through the test and the result showed that it suited with the needs for young learners. Non-probability sampling was the technique used. A total of 40 students from two classes made up the research sample. The vocabulary score achievement pre and post test using EVOCE robot were compared with data analysis and t-test. The findings of value of t-stat>t-table at significant level of 5% (1,679 >1,328) meaning that the robot helped students became better acquisition in getting new vocabulary and influenced their level of vocabulary score. As the result that this research therefore have consequences for the teacher's understanding that the usage of robots can both increase students' vocabulary and also have an impact on their level of English proficiency.

Keywords: *English for Young Learners, EVOCE Robot, Prototyping, Vocabulary*

Language(s) Learned in This Study: *English*

Introduction

Early language acquisition begins with what is heard, seen, and practiced, and this influences the children's vocabulary development [1] Susanto (2011) states that more than 2,500 vocabulary words can be pronounced by youngsters between the ages of 5 and 6 due to their language development. Children as young learner as 5 or 6 years old are already able to participate in a discussion when they can talk about nouns like things, and adjectives like beauty, feeling, speed, different and etc. Children are already able to hear what others are saying and participate in those conversations. Children between the ages of 5 and 6 have been known to comment on a variety of actions and events as well as what they saw [2].

Language is an aspect of society. Children can also be exposed to a language through audio-visual media [3,4]. Children who are learning a language are not given specific instructions on how to use it; instead, they actively create and test different uses for the language that they are exposed to [5]. Through this hands-on method, the kids create a language of their own that matches the language of the adults in their environment [6]. In light of this, the young child's mind is not a blank canvas that is filled by the surrounding and children's language is not a duplicate of what they hear around them and try to emulate [7]. Although a language clearly only consists of a small number of sounds, we are able to create an absolutely endless number of utterances

with just those sounds [8]. So, kids often come up with sentences that they have never heard before [9]. By the time a child enrolls in school, they have developed into proficient language users. In general, children learn words or vocabulary more quickly when supported by supporting tools, such as images, objects and sounds [10,11]. Early childhood is easier time to learn vocabulary because children more easily describe the words in their minds [12]. In general, what this research believe is the learning will support children to learn by creating a meaningful atmosphere for language learning and facilitate to immediate information process [13] and exposing to real objects which allows them visualize later, considered as a good way to study vocabulary of a language [14]. Moreover, the way that many kids live, study, and play has already started to be impacted by artificial technology [15,16. All of this paves the way for a day when children grow up not just as digital natives but also as natives of artificial intelligence, who will interact with technology in fundamentally different ways than previous generations [17].

Numerous studies have demonstrated that a young child's vocabulary size is a strong indicator of success in later grades: the broader the children's vocabularies in the primary classes, the higher their academic achievement in the upper years [21]. Children learn by observation and interaction with others which frequently results in psychological and behavioral changes in them. Additionally, when the context is useful and pertinent to them, learning is better fostered [22,23].

Based on the above explanation, the media that will help young learners in acquire words nouns or vocabulary in form of images, objects and sounds which using significant technological developments that provide an opportunity for teachers to develop a variety of alternative learning media as media in the teaching and learning process [24]. Literature review of Technology Enhanced Language Learning for foreign language learning revealed that most of the related robot applications for learning English have increased in recent years, especially in English for young learners [25]. Robots have also been used in English for young learners classes to help with vocabulary learning and production [26]. One of the benefits of robots that has long been recognized by research is that it allows children to develop sensorimotor skills through interaction with real objects [27] .

Educational Robotics Trends

Robot is a mechanical device capable of do human work or behave like human [18]. Robots are designed by humans to help humans in doing work that has high accuracy, high risk, and continuous with great power [19]. Based on the control process, robots are divided into two types, namely automatic robots and robots teleoperation robots [20].

The last ten years have seen a remarkable rise in global interest in robotics. Many people believe that robotics can provide new advantages to education at all levels [29]. Likewise expanding is the market for educational robots. Researchers and practitioners in education have praised this system for its ability to increase upper-grade students' interest in and understanding of many subjects [30].

Since then, there has been a steady increase in the use of robotic technology in public schools [31] (Neumann, 2019). The use of a variety of robot applications to engage young people in learning a variety of subjects is now a trend in educational robotics [32]. English as a second or foreign language is one of the topics. Students who learn English as foreign language is the area where robot helpers have been utilized the most frequently in Japan, Korea, China, and other nations seeking advancements in educational technology [33-36]. For young children, a plain computer screen devoid of social circumstances might not be as useful as a technological design that incorporates a social and interactive context. Children could acquire a language and literacy in a social and meaningful setting with a robot [37].

Recently, several business partners created a number of humanoid robots and investigated ways to use them to close the gap in education especially English for foreign language [38]. However, getting humanoid robots on the market for the general public has been significantly hampered by the expensive cost of production. Companies are vying

to create more practical and cheap robots for use in classrooms as well as to create high-caliber robot apps to support English for young learners. EVOCE robot seems to open up a whole new area of possibilities for affordable, instructional robots by combining a smart phone, robot toy, and learning tool.

Robot Assisted Language Learning has been shown to be effective in reducing foreign language anxiety and robot can help English for young learners learn English as a foreign language improve their oral skills. Alemi et al [25] conducted research with a robotic teaching assistant. Persian-speaking students in Iran were taught English as part of the research. A survey of the students revealed that those who learned from the robot were significantly less anxious than those who did not. While a variety of factors were thought to contribute to this reduction in anxiety, the authors claimed that intentional mistakes made by the robot were a major reason.

Thus, educational robots communicate with people in more human-like ways, such as through conversation, nonverbal clues, eye contact, expressive expressions, etc [39]. Back-channeling, attentive conduct, and vocal expressivity are just a few examples of the non-verbal cues that social robots use that young children are able to detect and respond to in rich ways [40].

From the previous studies mentioned above, the gap was difference between this study and other earlier studies that the EVOCE robot was implemented in increasing young learner students' vocabulary. The focus of the study, however, differs from the idea of the majority of the studies focused on English learning outcomes on cognitive development in English for young learners, then when compared to other forms of technology [28].

Therefore, this research was conducted to examine the effect of EVOCE robot in students' vocabulary and the process of prototype design. The results of this study are expected to increase the teachers' understanding of using varieties media to increase students' development in English vocabulary.

The robot used in this paper is EVOCE robot. We say that this robot is as an interactive learning media for early childhood based on the result of pre and post test data display below and this robot is utilized to develop young children's logical thinking skills. The given command buttons equipped on the robot, made students try to notice, observe, and remember the steps to be made. The robot may be programmed to move forward, backward, turn left, or revolve endlessly. A prototype robot will then be created to give students and teachers an overview for educational purposes.

Process of Design and Development

The research was carried out through a prototype modeling. The processes of needs analysis, design, product creation, testing, validation, and system implementation were used to build the Robot EVOCE prototype model.

Establishing Design Specifications

The robot system used in this study is composed of a number of electronic circuits that can be divided into three primary blocks: input, process, and output blocks. See the illustration below for further information, see figure 1:

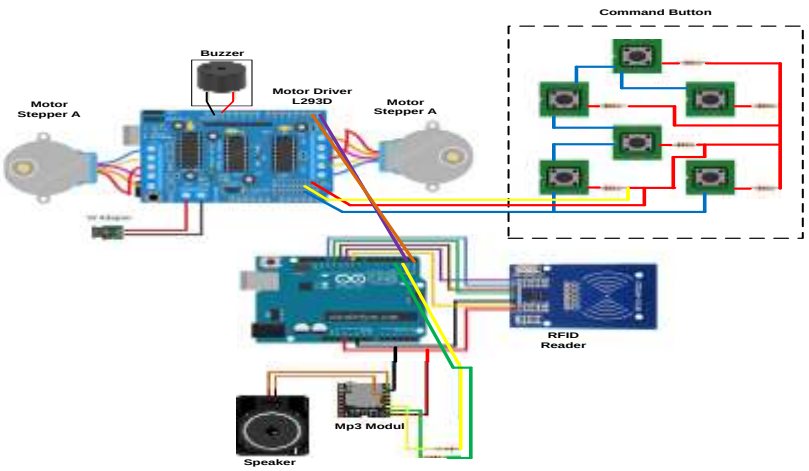

Figure 1. EVOCE Robot Prototype Series

There are two different forms of input media in the systems mentioned above -command buttons and RFID sensors. The RFID sensor is a sensor that will eventually work to recognize or detect images on the mattress based on the ID number on the mattress, whereas the command button serves as a medium for interaction between the user and the robot.

a. Process Block

As the circuit's primary processing device or controller, the process block is made up of numerous Arduino microcontroller boards. Two Arduino microcontroller boards are employed in this study; one board processes and executes user-inputted commands, whereas the other board serves a different purpose. While the other board processes data from the RFID sensor and checks the ID number against the required sound file, the first board processes input from the RFID sensor.

b. Output Block

The output of this evoke robot system is a robot that moves from one location to another while making English-language sounds in response to the image of the mattress that is picked up by the ID number. This prototype can be used to teach English, particularly when introducing new vocabulary.

Hardware Design

The following circuits are utilized in hardware design:

a. Power supply

This EVOCE robot runs on an 18650 3.7 volt type of lithium-ion battery. Three batteries are utilized, two of which are wired in series to act as the microcontroller's power source. While 1 provides power to the speakers using only pure batteries.

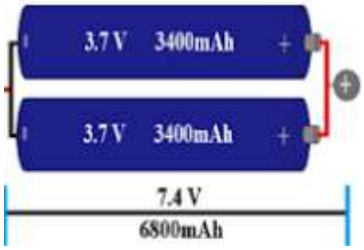

Figure 2. Evoke robot power supply battery circuit

b. Sensor

The sensor used to detect the code on the mattress is RFID type RC522. The function of the sensor is to read the ID number on the RFID sticker tag mounted on the mat, so that the robot is able to identify the sound code that will be played according to the image on the mat.

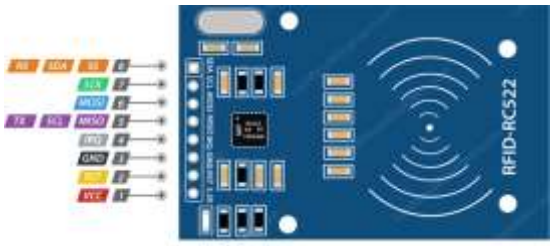

Figure 3. RFID RC522

c. Mechanical

Stepper motors are used in the robotic wheel drive system. By keeping track of the motor's steps, the usage of a stepper motor attempts to make it easier to regulate the robot's distance traveled. A 90-degree rotation angle also makes it easier to control the robot's rotational direction.

Figure 4. Stepper Motor

d. Controller

As a robot controller circuit, this study used the Arduino uno r3 microcontroller board. The number of Arduino boards used is 2 pieces. One Arduino board is used as a driving controller or robot mechanic, while the other is used to control the RFID sensor and Sound Module.

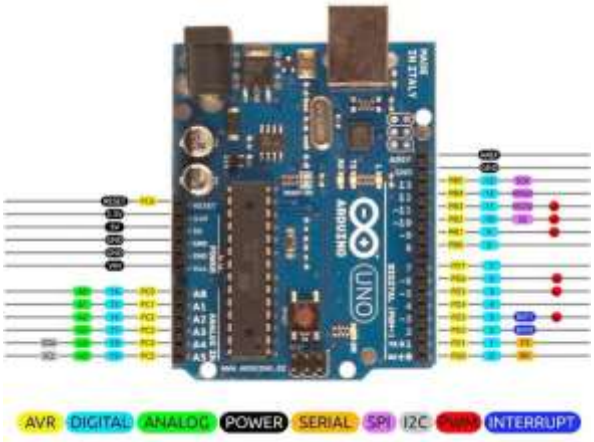

Figure 5. Arduino uno r3 board

Table 1. Types of PINs and Functions on Arduino Uno R3

PIN Category	PIN Name	Details
Strength	Vin, 5V, 3.3V, GND	Vin: Input voltage to Arduino when using an external power source. 5V: The power supply used for the microcontroller board. 3.3V: Voltage generated by the on-board regulator. GND: Ground
Reset	Reset	Resetting the microcontroller
Analog PIN	A10-A5	To provide an analog input of about 0-5V
Input/Output PIN	PIN digital 0-13	Adaptable to input and output PIN

PWM	3, 5, 6, 9, 11	To receive or transmit TTL serial data
SPI	10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK)	As an interrupt trigger
LED	13	Supplying 8-bit PWM output
TWI	A4 9SDA), A5 (SCA)	As SPI communication
AREF	AREF	To turn on the LED light

Source: www.arduino.cc

Software Design

Arduino IDE is software that is used to create programming sketches or in other words Arduino IDE as a medium for programming on Arduino microcontrollers. Writing code/programs through Arduino IDE using C language. The program written on this Arduino device has the following functions:

a. As a mechanical controller that drives the robot, in this case the driver uses a mechanical stepper motor, as well as receiving input from the user via the command button that has been provided. The commands on the button function to move the robot forward, backward, turn left, and turn right.
b. The code/program written on the second Arduino microcontroller board functions to read the ID number on the mattress, then plays the mp3 file that matches the ID number obtained.

Figure 6. Arduino IDE EVOCE receiver

The programming step also done in this stage by providing the process of giving a computer (or a robot) a series of commands to make it do exactly what we want it to do. A programming language is a language that is understood by computers. It is made up of commands that can be entered into the computer. A program is made up of one or more command sequences. Computers run programs that are written in a programming language. EVOCE robot understands four different commands: one that tells it to move one field forward, one that tells it to move two fields forward, and one that tells it to move three fields forward. There are four key concepts when you use EVOCE robot. First, it turns on the spot, not sideways, next it moves in a straight line forwards and backwards, then the more button

presses you enter, the faster it moves and last users must enter instructions precisely.

The children should be familiar with the EVOCE buttons and understand how to use them. EVOCE benefits from a mix of directed and free play time. Children may require some time to understand the clear button, move forward and backward, and turn left and right. They will also need to practice pressing the GO button once the EVOCE is ready to move. Most children benefit from being shown how to use the EVOCE. While some children will enjoy playing and figuring out how to make it work, many will become bored if EVOCE continues to do the wrong thing. The Clear button is critical. Some teachers have discovered that telling some students that the clear button 'helps to tell EVOCE to listen to new commands' is beneficial.

Concepts Commands are the fundamental actions that are pre-programmed into a coding language.

Findings and Discussion

Pre-Experiment Activity

An EVOCE robot was created by the researchers. By identifying and speaking English words, this robot is utilized to develop young children's logical thinking skills. With the help of the given command buttons, the robot may be programmed to move forward, backward, turn left, or revolve endlessly. The robot's RFID sensor will be engaged when the command to move from box to box has been carried out, allowing it to read the ID number on the mat where the robot's location has stopped. Using the ID number that is read to identify the sound file, the robot will play the sound in English as shown in the illustration of the mat below.

EVOCE robot responds to six commands: Move forward, move backward, turn left, turn right, pause for 1 second, and then clear all commands. When commands are combined in a specific order, they form a program then event in coding instructs your program to detect when something external occurs and to take action when it does. The only event that EVOCE robot can detect is when the "go" button is pressed. This button launches the program.

The press button starts the EVOCE robot moves while it is going through the line, the EVOCE will pronounce the words it passes. There are three main topics to be produced by EVOCE robot while passing the mat, they are school supplies, foods and drinks and also clothes.

After having finished designing EVOCE robot, the researchers continued the implementation of this robot in the classroom. The result of observing and experimenting the robot described in the next part.

Figure 7. Exhibiting the EVOCE Robotics Prototype

The EVOCE robot prototype is utilized as a tool for English language acquisition when introducing vocabulary to young children, as well as for honing kids' logical thinking skills through straightforward programming. This learning model is one of the ones that can be used with STEM-based teaching strategies (Science, Technology, Engineering and Mathematics).

EVOCE Robot Prototype Test Result

Numerous tests were conducted, including tests of the sound module, the RFID sensor module, and the

robot driving system. Testing of the entire system is done to see how well the robot prototype system has operated. The user can configure the robot's movement by pressing the forward (blue button up), backward (blue button down), turn left (white button next to left), and turn right buttons once the robot's memory has been cleared by pressing the clear button (red button) at the beginning of use (right white button). The next stage is to hit the green button to start the robot after entering a series of orders using the button. The robot will move in accordance with the preprogrammed command, and when it stops, it will scan the ID number on the mat directly underneath it in order to recognize it and play the appropriate sound file. The results of the EVOCE robot function test are shown in the table below:

Table 3. Types of PINs and Functions on Arduino Uno R3

No	Requirements tested Test Items	Test Results	
		Yes	No
Arduino 1	Is EEPROM memory capable of holding commands?	✓	
Arduino 1	When the green button is pressed, can the data stored in the EEPROM memory be retrieved?	✓	
Arduino 1	When the Red button is pressed, is the data in the EEPROM memory deleted?	✓	
Arduino 2	Is the ID Number detectable by the sensor module?	✓	
Arduino 2	Are the speakers capable of playing mp3 audio files?	✓	
Left Stepper	Does the stepper motor rotate in the predetermined direction?	✓	
Right stepper	Does the stepper motor rotate in the predetermined direction?	✓	
Move Forward and Backward	The robot prototype can it go forward and backward.	✓	
Turn left and right	Can the prototype robot rotate 90 degrees left or right?	✓	

The percentage of error value can be determined from the validation functionality results in table 3 above using the formula:

$$\text{Error } \% = \frac{9-9}{9} \text{x } 100\% = 0\ \%$$

Thus, based on the results of the functional validation test, it can be categorized as functioning very well. In the left and right turn test, the robot does not have a precision of 900 rotation directions, but when moving forward or backward the robot prototype does not come out of the mattress box measuring 20 x 20 cm, so it is concluded that the robot moves to the left or right with a level of precision that can still be tolerated.

Testing of the Robot Driving System

To make sure that the robot drive can be programmed and can operate in accordance with the program sequence that has been fed into the EEPROM memory, this drive system is tested. See the video of driving system test. A testing table for the EVOCE robotic driving system is shown below:

Table 4. Test of the Robot Drive System

No.	Order of Command	Motor Movement		Robot Prototype Motion
		Left motor	Right motor	
1		CW	CCW	Move forward
2		CCW	CW	Moving backward
3		CW	CW	Move around to the right
4		CCW	CCW	Move around to the left

Based on the test results, it can be said that the robot prototype propulsion system is already capable of performing the determined functions and commands. The left motor propels the vehicle forward while the right motor rotates in the opposite direction (CCW). When moving backwards, the left motor turns in a counterclockwise (CCW) direction, while the right motor turns in a clockwise direction (CW). Following that, the left and right motors rotate clockwise (CW) to move the prototype to the right, and vice versa to move the prototype in the opposite direction (CCW).

Sound Module Testing

The sound module (DF Player Mini) is put to the test to determine the voltage that is generated when the DF Player Mini module plays the recorded sound on the SD memory card. See the video of sound module test. The voltage will be measured using a digital multitester. The table 5 below shows the outcomes and test photos.

Table 5. Sound Module Testing (Mini DF Player)

Trial No.	Mini DF Player Module Status	Length of Time	Voltage (V)	Description
1	Receiving no responses	0	0.088	Sound DF Player off
2	Getting Response	5	0.694	Sound DF Player on

The result of sound module testing shown that mini DF player module's test results show that a voltage of 0.694 volts is produced when an mp3 file is played on the device when it is used to play a mini DF player.

RC522 RFID Sensor Testing

RFID Card testing is carried out using a frequency emission sensor of electromagnetic waves issued from the RFID reader RC522. This experiment uses 2 RFID cards, one of which can be accepted and rejected through RFID card detection by verifying the ID number that has been obtained, one of which will be entered into the source code program of the entire tool. Testing the RFID card is by sticking one of the cards closer to the RFID reader rc522 at a distance of 1-3 cm. The first test that must be done is to read the detection of the RFID card received by the RFID Reader. The way to get the ID number stored from the RFID card is to run the program on the Arduino IDE through the sample provided from the RFID card sales source who has provided a special library for testing the RFID card. The pins connected to Arduino and loaded in the Arduino IDE program have been set that pin D10 as SS (Software Serial) and pin D9 as Reset pin. This is done to test whether the RFID card can be detected on the serial monitor by attaching the RFID card to the RFID Reader. After obtaining the ID number on the card, the next step is to make a comparison logic by comparing the ID number obtained with the ID number data in the program. If the ID number is found, the sound of the .mp3 file will be played through the DFPlayer mini module, while if the ID

number is not found, the system does not respond.
The following is a table of RFID test samples:

Table 6. Testing the RC522 RFID RFID sensor

No.	Id Number	Condition	Action
1	24 BD 27 CD	Found	Sound file 0001.mp3 played
2	81 B4 E0 26	Found	Sound file 0002.mp3 played
3	E5 D2 98 EE	Not Found	No Respond

Pre-test was held in this session. Two groups (control and experiment class) were having vocabulary test. Both classes got basic vocabulary test.

Experiment Activity

Over a two-week period, there were four sessions of the experiment. The experiment group members got the opportunity to operate EVOCE robot. About 20 of the 40 students present in each session operated with robots. Having practiced with robots of varied topics, they were school supplies, foods and drinks and also clothes . The robot was available for all of the students to be operated with and inquire about the words' meanings. This only applicable to experiment class while the control class were not using the robots.

Post Experiment Activity

The post-test was given to the students after the experiment finished. On the same day, both group (control and experiment class) completed the vocabulary test. Overall, the methodical process took a month to complete and covered all of the key steps.

Data analysis

The SPSS version 23 program was used to analyze the quantitative data. The outcomes of the post-test were compared to those of the pre-test using the independent samples t test. The data from the observational method was examined to produce descriptive statistics which has been described above. Regarding the research questions, the results are presented below.

Table 7. Paired Samples Statistics Control Class

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test Control	70.0000	20	7.94719	1.77705
	Post-Test Control	74.2500	20	7.12206	1.59254

Table 7 above shown that average results of the pre-test and post-test for control class there was no significant difference between the average post-test results (74.25) and the average pre-test results (70.00). It means that for control class has slightly different increasing mean score from pre-test and post-test as amount as 4.25 point.

Table 8. Paired Samples Statistics Experiment Class

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test Experiment	71.5000	20	8.59927	1.92285
	Post-Test Experiment	78.8500	20	8.43723	1.88662

The data in table 8 showed that the average results of pre-test and post-test in the experimental class that there was a difference in the results where the post-test results were higher (78.85) than the pre-test results (71.50). It means that there was slightly

significant effect of using EVOCE robot in experiment class.

Table 9. Paired Samples T-Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Post-Test Control - Post-Test Experiment	-4.60000	12.24917	2.73900	-10.33279	1.13279	-1.679	19	.109

Table 9 result showed that based on df = 20-1 = 19 at a significant level of 5%, a t-table of 1,729 is obtained and at a significant level of 1%, a t_{tabel} of 1.328 is obtained. With a t_{count} of 1.679, it means that it is greater than t_{tabel} at a significant level of 5%, while at a significantly smaller level of 1% (1.729 <1.679 > 1.328) then H0 is rejected and Ha is accepted. In other words, there is a significant difference between student learning outcomes between the post-test in the experimental class and the post-test in the experimental class at a significance level of 5%.

From the significance value (2-tailed) between the pre-test and post-test values, a value of 0.109 is obtained, which means greater than 0.05. It can be concluded that there is no difference in the results between the control class post-test and the experimental class post-test.

Discussion

There were two main objectives to be explained in this part. The first was about the prototype EVOCE microcontroller circuit are powered by two separate sections. The Arduino Uno R3 series board was the microcontroller board that was utilized as a robot control system [45-47].

The second objective was to find out whether the EVOCE robot contributed the impact on the students' score on vocabulary. The current study did not uncover a significant difference between the robot design process and next was the impact of this robot towards the achievement of students' vocabulary. The research result showed that concepts commands are the fundamental actions that are pre-programmed into a coding language. EVOCE robot responds to six commands: Move forward, move backward, turn left, turn right, pause for 1 second, and then clear all commands. When commands are combined in a specific order, they form a program then event in coding instructs your program to detect when something external occurs and to take action when it does. The only event that EVOCE robot can detect is when the "go" button is pressed. This button launches the program. These steps became students more creative and innovative and the robots were as interactive learning media for early childhood [17, 27].

There are three main topics to be produced by EVOCE robot while passing the mat, they are school supplies, foods and drinks and also clothes. [41]. One piece is especially utilized to deliver voltage to the speakers, while the driving motor and two groups' performances in vocabulary learning. Nevertheless, both groups significantly increased their vocabulary, which is in line with other research done by Schodde et al [42]. The result of students score in learning vocabulary did not show the effect significantly somewhat better in terms of the mean scores, which is different from the findings of Alemi et al [43] which used the same robot and function but with a group of school-aged

participants. There could be a number of causes for this result.

First factor was the students in this study were younger than those in other studies, which is a difference achievement result score [44,45] (Eimler et al., 2010; de Wit et al., 2018). This finding EVOCE robot contributed a slightly effect on students' achievement.

Second factor, the function and the program of the EVOCE robot prototype sometimes did not work properly, so some students were difficult to catch the sound of vocabulary produced by the robot. This result correlated with [6,39] (Levine; 2020, Lee et al; 2011) findings that product of robot needed more overview of the additional program, thus the operation run smoothly.

Third factor, this EVOCE robot was quite new introduced to the students. Thus, the acceptance and the training led a little bit longer and made the students frustrated getting the new English vocabulary, although, robot was attracting them to play and study but the psychological factor affected their mood in learning foreign language [2].

Conclusion

Based on the results of the study, it can be concluded that the goal of this study was to ascertain whether using robots may affect young language learners' vocabulary acquisition and the process toward using such technology. Data that were both quantitative and qualitative were thus gathered. Since participants in both groups achieved comparable progress in vocabulary learning, the quantitative data analysis did not identify any statistically. This result may be explained by a number of important factors including the novelty of the technology used, the participants' limited prior interaction with the robot, issues with voice recognition and speech rate that were reported, students' poor listening skills, individual differences, and reported technical difficulties. Different reactions to the technology could have been caused by these variables. Additional research is required to further understand how many circumstances affect the results of this experiment because this study was limited to one. It is hoped that in the next stage of research, the robotic microcontroller circuit can be made to be a minimum size so that the size of the robot can be reduced again. In addition, the robot drive system should use a gearbox so that it can increase the RPM of the stepper motor. It is hoped that the smaller robot design and the increased movement speed of the robot can make this EVOCE robot prototype a superior product in learning vocabulary recognition in early childhood.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

Acknowledgments

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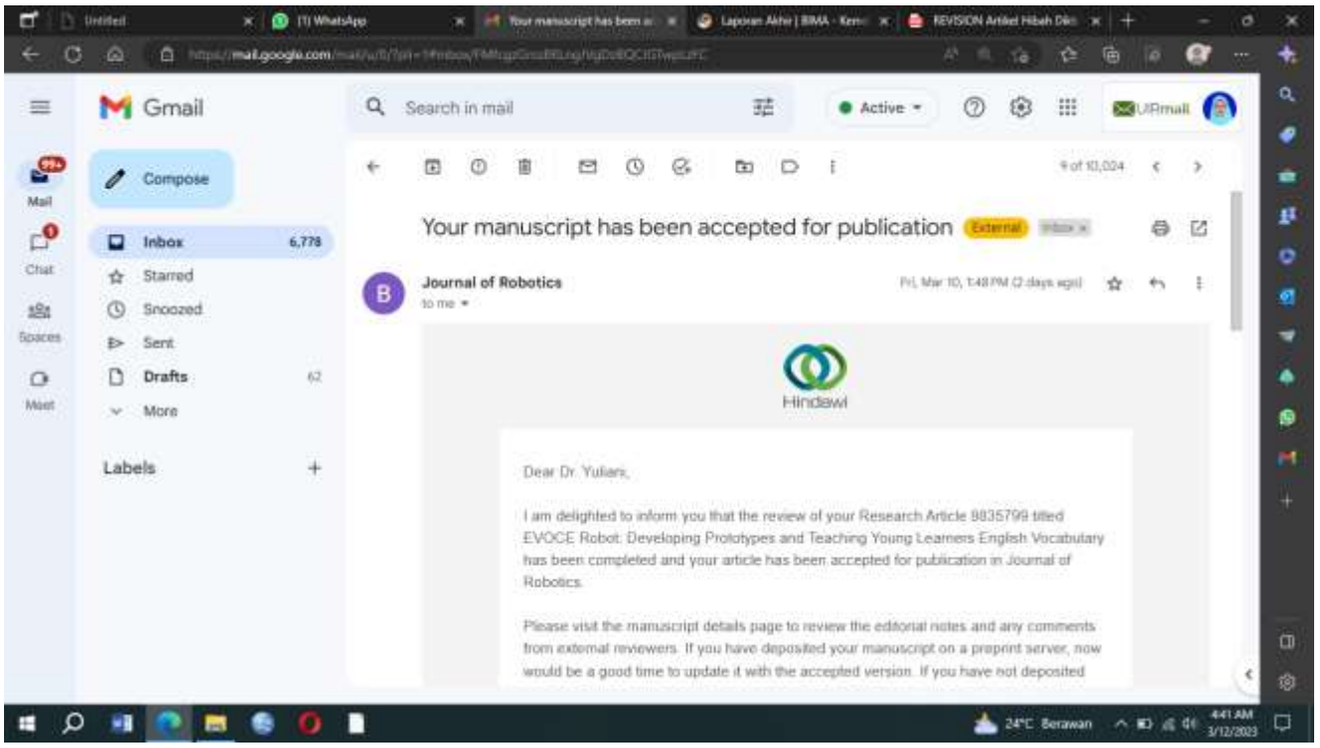
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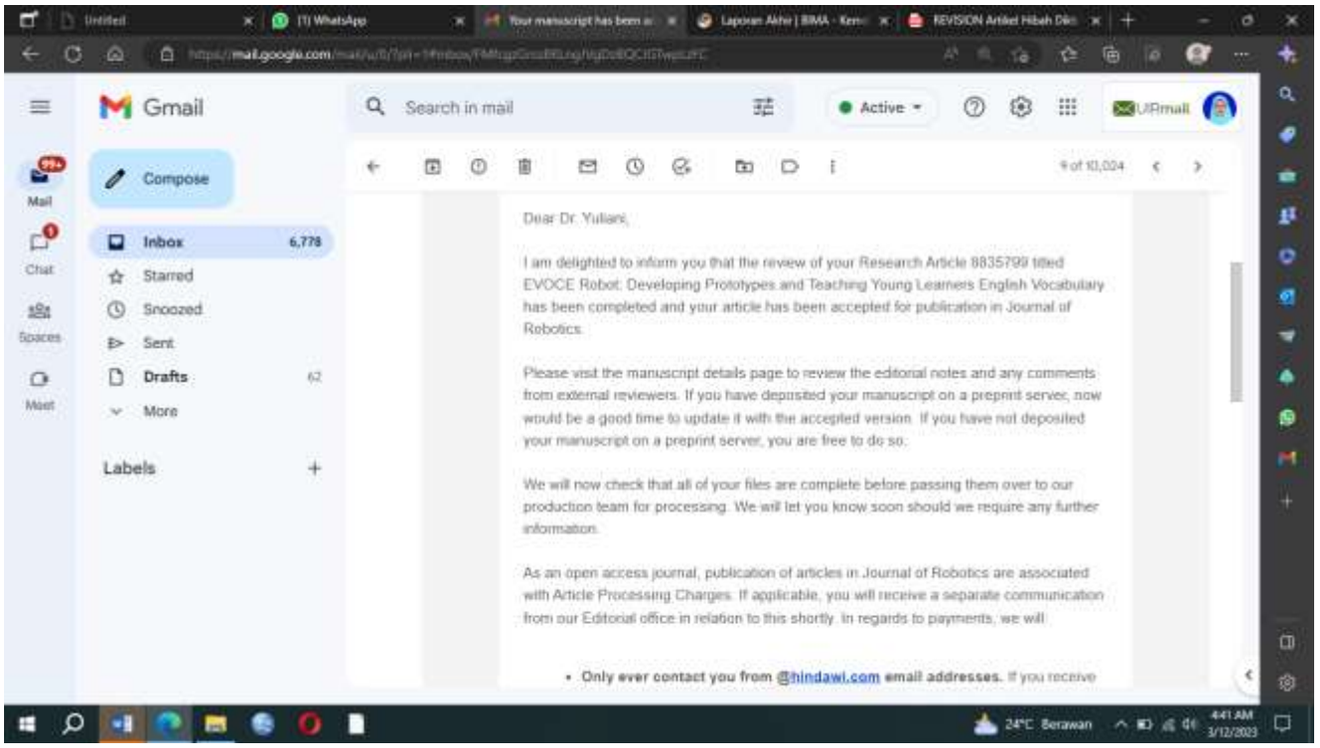
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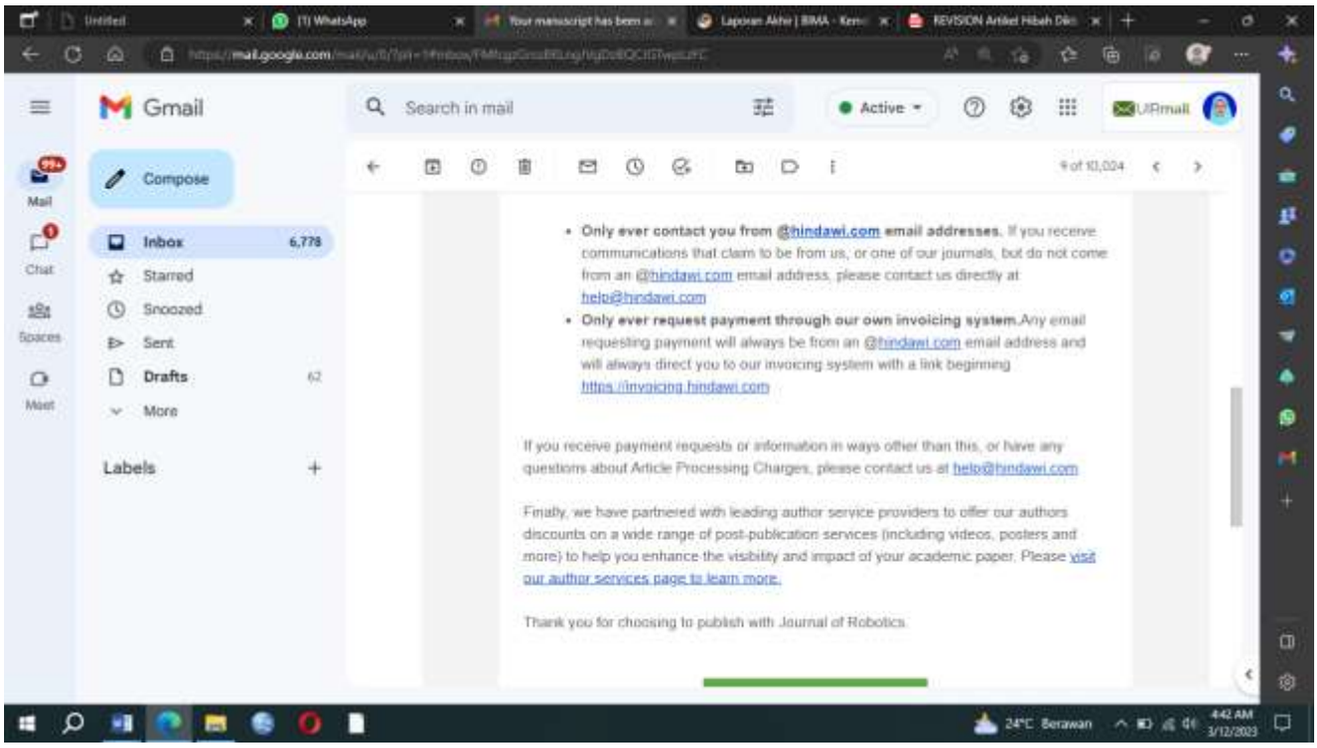
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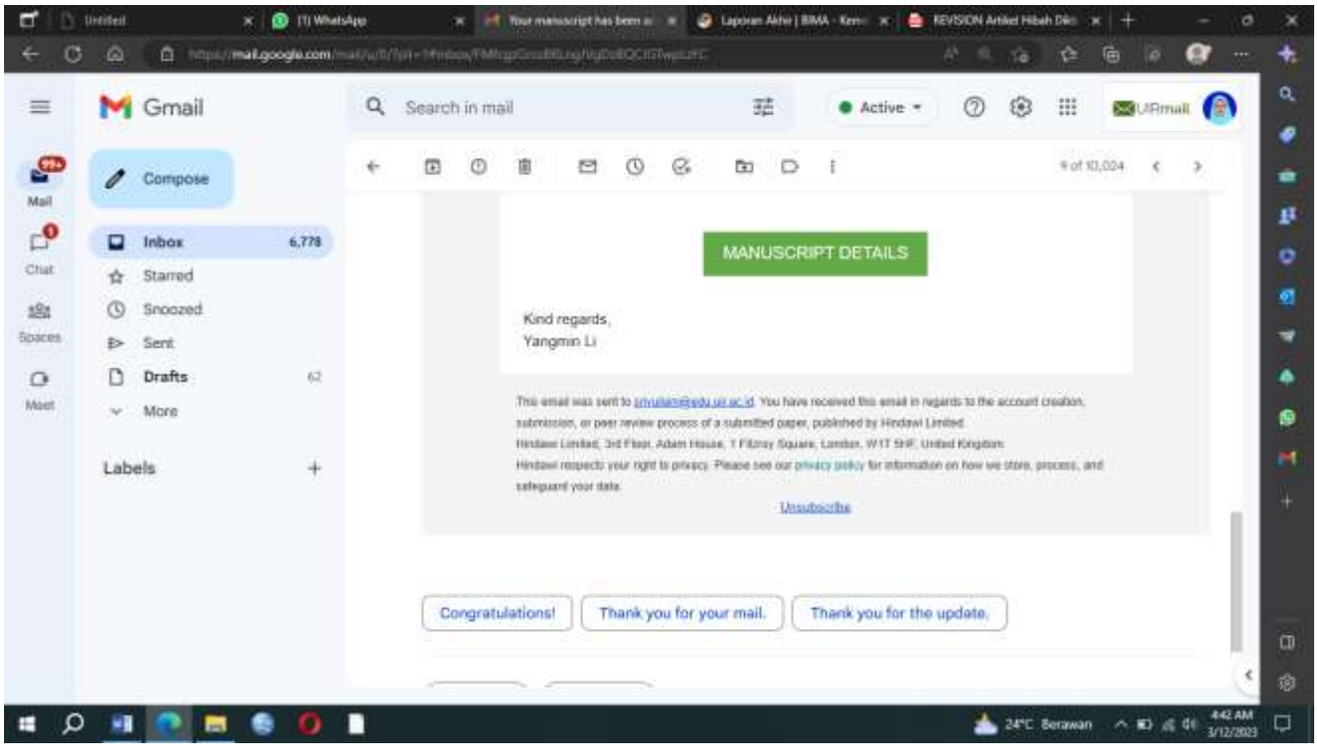
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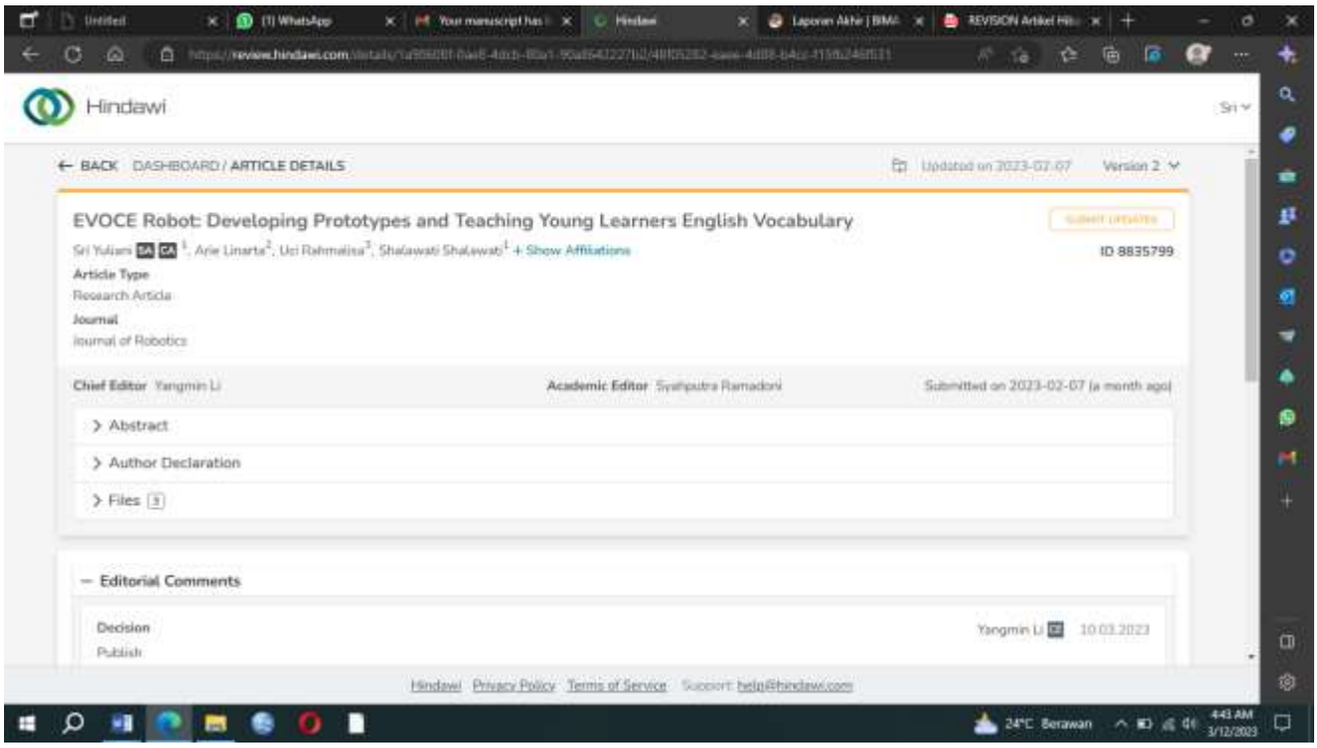
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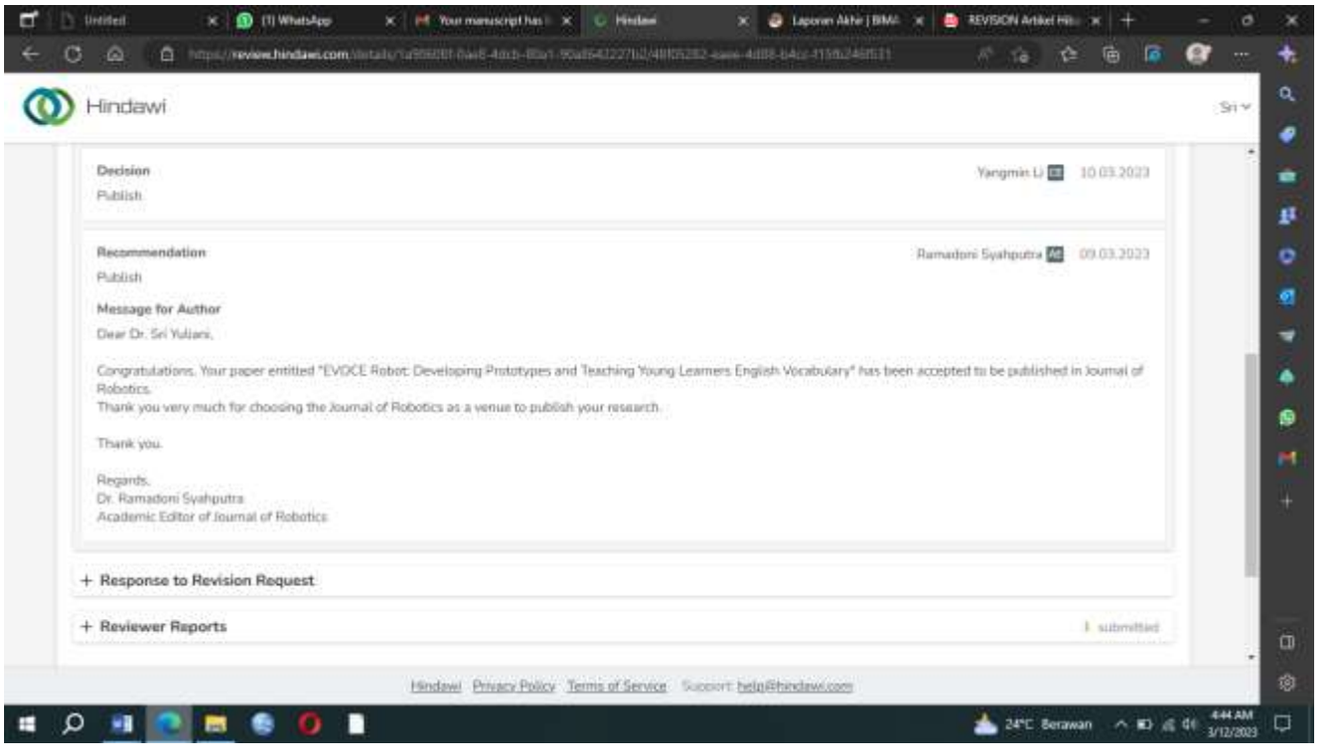
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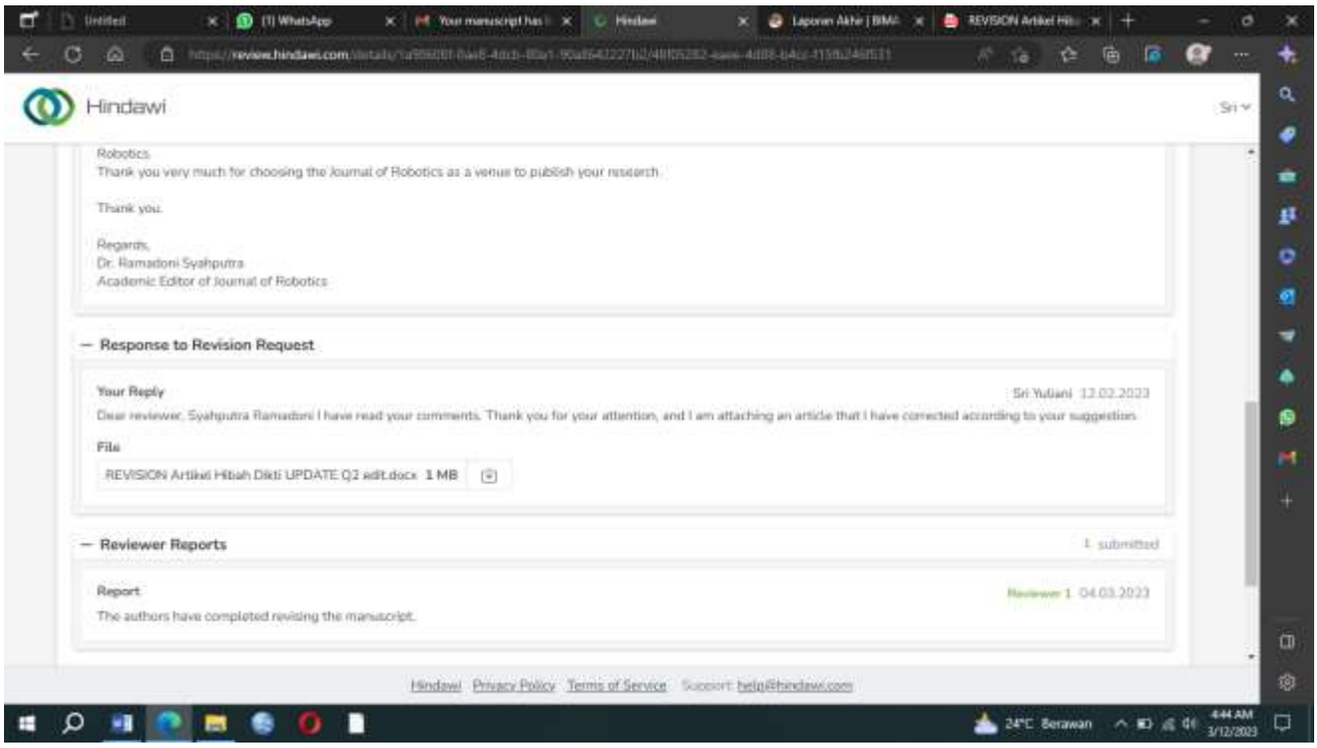
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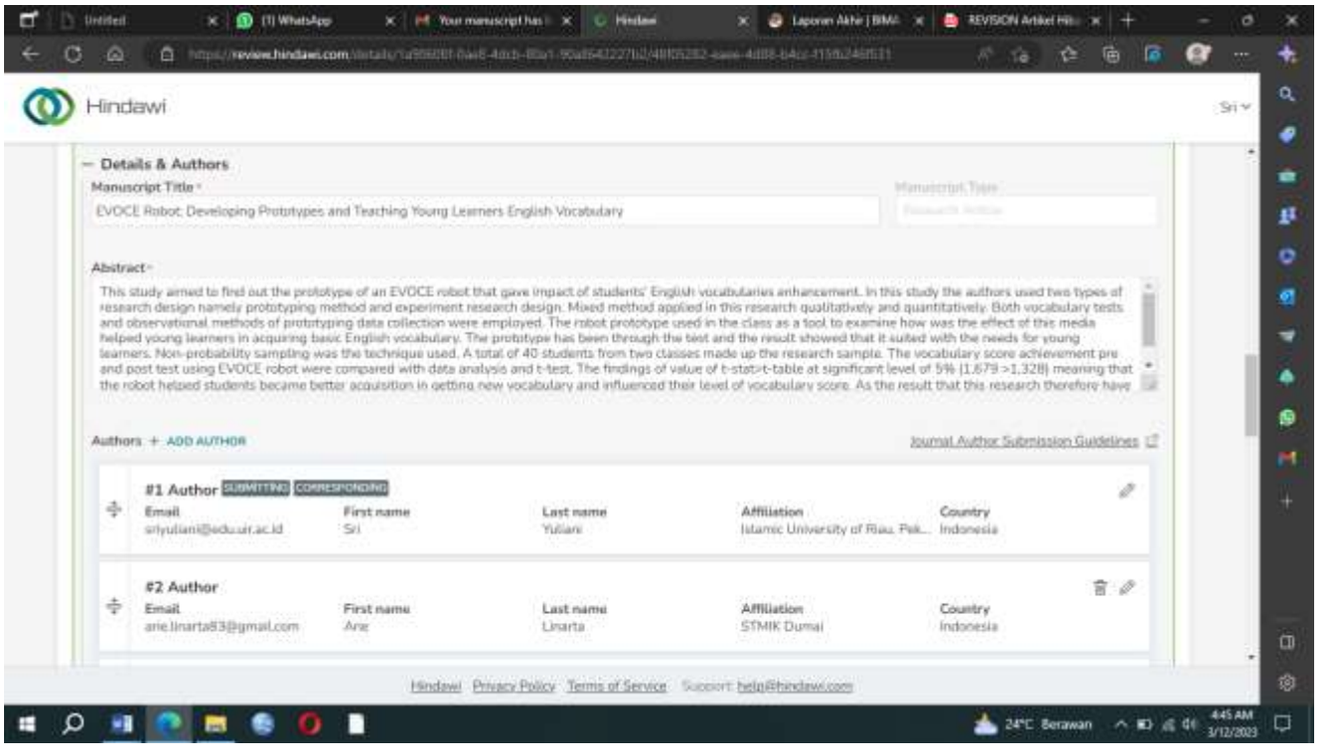
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Abstract
This study aimed to find out the prototype of an EVOCE robot that gave impact of students' English vocabularies enhancement. In this study the authors used two types of research design namely prototyping method and experiment research design. Mixed method applied in this research qualitatively and quantitatively. Both vocabulary tests and observational methods of prototyping data collection were employed. The robot prototype used in the class as a tool to examine how was the effect of this media helped young learners in acquiring basic English vocabulary. The prototype has been through the test and the result showed that it suited with the needs for young learners. Non-probability sampling was the technique used. A total of 40 students from two classes made up the research sample. The vocabulary score achievement pre and post test using EVOCE robot were compared with data analysis and t-test. The findings of value of t-stat>t-table at significant level of 5% (1.679 >1.328) meaning that the robot helped students became better acquisition in getting new vocabulary and influenced their level of vocabulary score. As the result that this research therefore have
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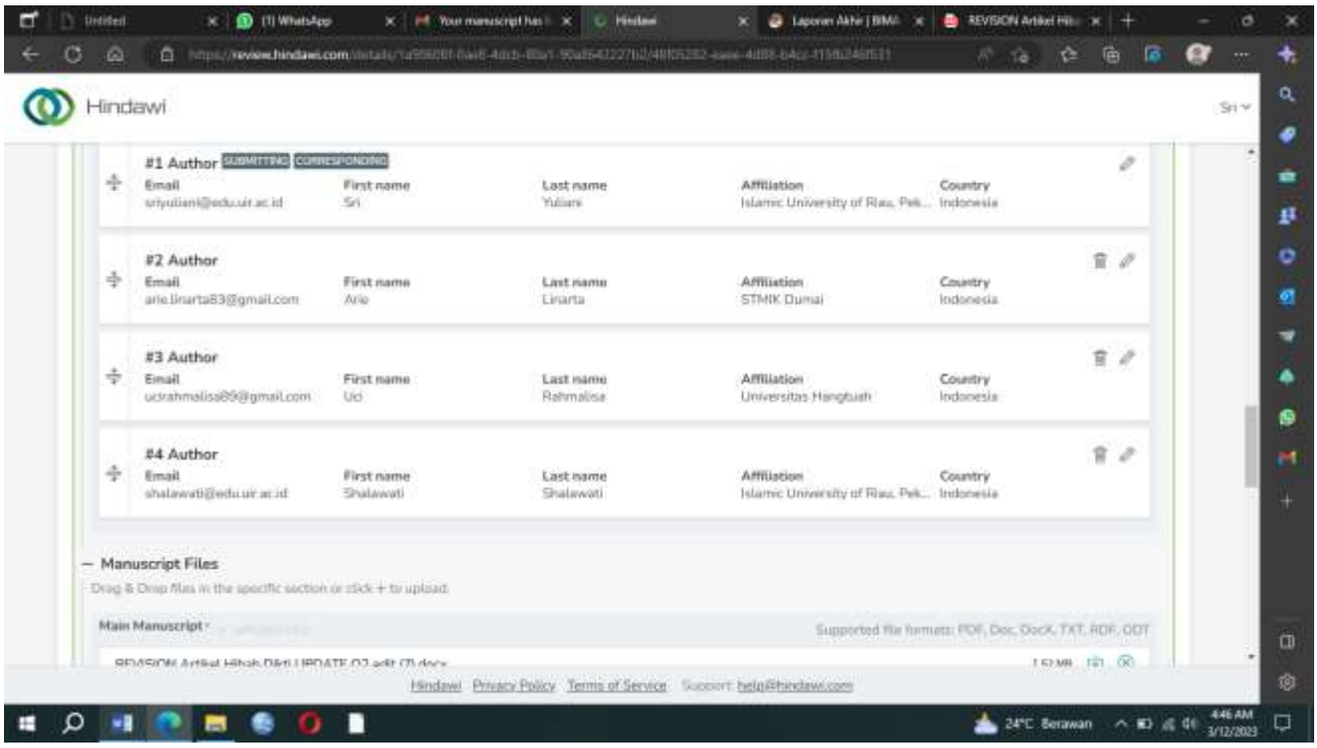
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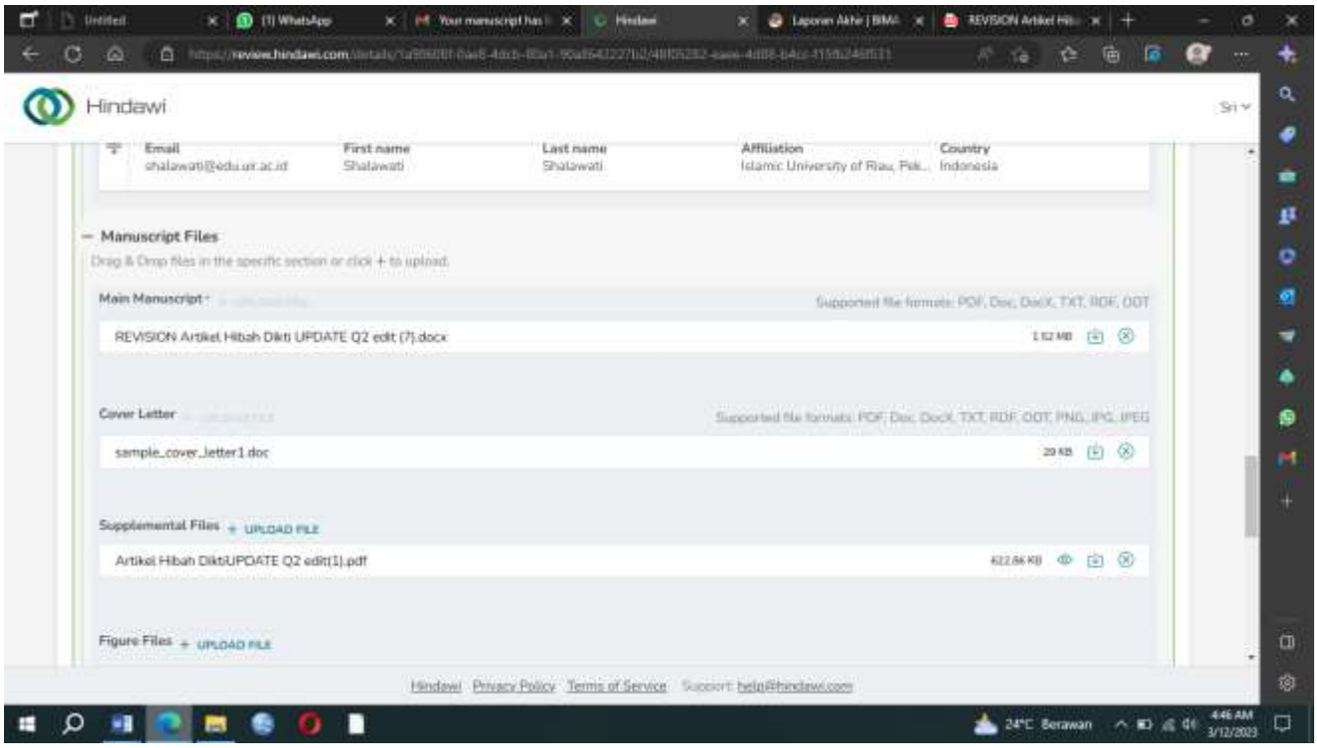
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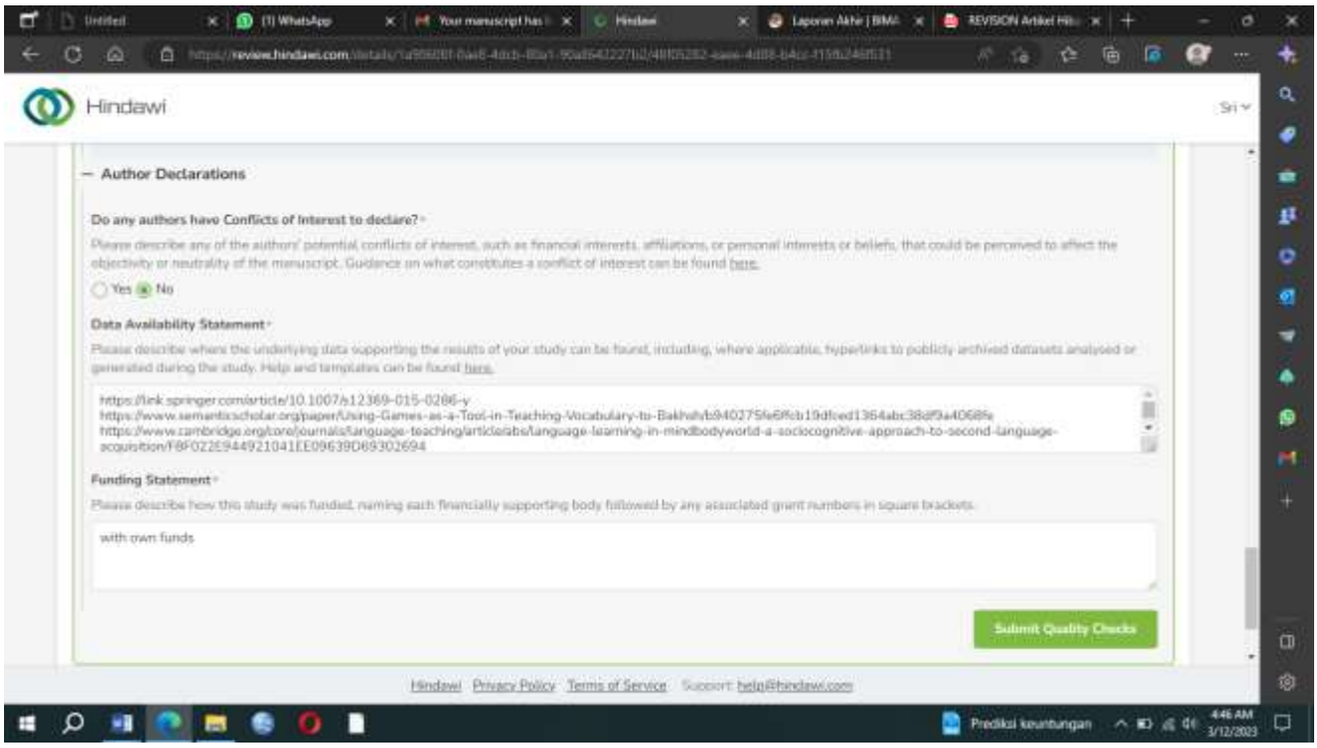
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https://link.springer.com/article/10.1007/s12369-015-0286-y
https://www.semanticscholar.org/paper/Using-Games-as-a-Tool-in-Teaching-Vocabulary-to-Bakhshyb940275fe6f9b19dfced1364abc38df9a4068fe
https://www.cambridge.org/core/journals/language-teaching/article/abs/language-learning-in-mindbodyworld-a-sociocognitive-approach-to-second-language-acquisition/F8F022E944921041EE09639D69302694
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SURAT PERNYATAAN TANGGUNG JAWAB BELANJA

Yang bertanda tangan di bawah ini :

Nama : Dr. Sri Yuliani, S.Pd, M.Pd
Alamat: Jl. Kaharuddin Nasution No. 113 Marpoyan Pekanbaru - Riau

Berdasarkan Surat Keputusan Nomor SP DIPA-023.17.1.690523/2022 dan Perjanjian / Kontrak Nomor 162/E5/PG.02.00.PT/2022; 005/LL10/PG.AK/2022; 016/KONTRAKHIBAH/DPPM-UIR/ 2022 mendapatkan Anggaran Penelitian *ROBOT EVOCE SEBAGAI UPAYA MENINGKATKAN KEMAMPUAN VOCABULARY PADA ENGLISH FOR YOUNG LEARNERS* sebesar Rp. 90,000,000

Dengan ini menyatakan bahwa :

1. Biaya kegiatan Penelitian di bawah ini meliputi :

No	Uraian	Jumlah
01	**Bahan** Arduino Uno Board, Motor Stepper 28BYJ-48 5V 4-phase, Driver motor L293D, Roda Karet Diameter 40mm, Cap Tutup Push Button Round 12x12x7.3 Knob Tactile Momentary Switch, Modul MP3 Player Speaker Mini, Batrei Li Ion 2 S 10000 MaH, TURBO Charger 3.0,Akrilik lembaran A3 (420 mm x 300 mm) Tebal 2mm, Lem Akrilik, Lampu LED, Buzzer 5v, Kabel USB, Mesin Gerinda Mini, Blower/Solder Station, Timah Solder, Sedotan Timah, Power Suplay Digital, Matras Pembelajaran (Vocabulary) ukuran 1 x 1 meter	29,791,000
02	**Pengumpulan Data** HR Pengumpul Data, Konsumsi, Uang Harian, Transportasi	15,609,000
03	**Analisis Data(Termasuk Sewa Peralatan** Sewa Peralatan, Jasa Programmer	24,600,000
04	**Pelaporan, Luaran Wajib dan Luaran Tambahan** Jurnal Scopus dan Jasa proof reading	20,000,000
05	**Lain-lain**	0
	Jumlah	**90,000,000**

Jumlah uang tersebut pada angka 1, benar-benar dikeluarkan untuk pelaksanaan kegiatan Penelitian dimaksud.

Demikian surat pernyataan ini dibuat dengan sebenarnya.

Pekanbaru, 29-11-2022

Ketua,

(Dr. Sri Yuliani, S.Pd, M.Pd)
NIP/NIK 14718600771001

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Research Article

EVOCE Robot: Developing Prototypes and Teaching Young Learners English Vocabulary

Sri Yuliani,[1] **Arie Linarta**,[2] **Uci Rahmalisa**,[3] **and Shalawati**[1]

[1]*Universitas Islam Riau, Pekanbaru, Indonesia*
[2]*STMIK Dumai, Dumai, Indonesia*
[3]*Universitas Hangtuah, Pekanbaru, Indonesia*

Correspondence should be addressed to Sri Yuliani; sriyuliani@edu.uir.ac.id

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This study aimed to find out the prototype of an EVOCE robot that gave impact of students' English vocabularies enhancement. In this study, the authors used two types of research design, namely, prototyping method and experiment research design. The mixed method is applied in this research qualitatively and quantitatively. Both vocabulary tests and observational methods of prototyping data collection were employed. The robot prototype used in the class as a tool to examine how was the effect of this media helped young learners in acquiring basic English vocabulary. The prototype has been through the test and the result showed that it suited with the needs for young learners. Nonprobability sampling was the technique used. A total of 40 students from two classes made up the research sample. The vocabulary score achievement pre and post test using EVOCE robot was compared with data analysis and *t*-test. The findings of value of *t*-stat > *t*-table at the significant level of 5% (1,679 > 1,328) meaning that the robot helped students become better acquisition in getting new vocabulary and influenced their level of vocabulary score. As the result, this research therefore has consequences for the teacher's understanding that the usage of robots can both increase students' vocabulary and also have an impact on their level of English proficiency.

1. Introduction

Early language acquisition begins with what is heard, seen, and practiced, and this influences the children's vocabulary development [1] Susanto states that more than 2,500 vocabulary words can be pronounced by youngsters between the ages of 5 and 6 due to their language development. Children as young learner as 5 or 6 years old are already able to participate in a discussion when they can talk about nouns such as things and adjectives such as beauty, feeling, speed, and different. Children are already able to hear what others are saying and participate in those conversations. Children between the ages of 5 and 6 have been known to comment on a variety of actions and events as well as what they saw [2].

Language is an aspect of society. Children can also be exposed to a language through audio-visual media [3, 4]. Children who are learning a language are not given specific instructions on how to use it; instead, they actively create and test different uses for the language that they are exposed to [5]. Through this hands-on method, the kids create a language of their own that matches the language of the adults in their environment [6]. In light of this, the young child's mind is not a blank canvas that is filled by the surrounding and children's language is not a duplicate of what they hear around them and try to emulate [7]. Although a language clearly only consists of a small number of sounds, we are able to create an absolutely endless number of utterances with just those sounds [8]. So, kids often come up with sentences that they have never heard before [9]. By the time a child enrolls in school, they have developed into proficient language users. In general, children learn words or vocabulary more quickly when supported by supporting tools, such as images, objects, and sounds [10, 11]. Early childhood is easier time to learn vocabulary because children more easily describe the words in their minds [12]. In general, what this research believe is that the learning will

support children to learn by creating a meaningful atmosphere for language learning and facilitate to immediate information process [13], and exposing to real objects, which allows them visualize later, is considered as a good way to study vocabulary of a language [14]. Moreover, the way that many kids live, study, and play has already started to be impacted by artificial technology [15, 16]. All of this paves the way for a day when children grow up not just as digital natives but also as natives of artificial intelligence, who will interact with technology in fundamentally different ways than previous generations [17].

Numerous studies have demonstrated that a young child's vocabulary size is a strong indicator of success in later grades; the broader the children's vocabularies in the primary classes, the higher their academic achievement in the upper years [18]. Children learn by observation and interaction with others which frequently results in psychological and behavioral changes in them. Additionally, when the context is useful and pertinent to them, learning is better fostered [19, 20].

Based on the previous explanation, the media that will help young learners acquire words nouns or vocabulary in form of images, objects, and sounds using significant technological developments provide an opportunity for teachers to develop a variety of alternative learning media as media in the teaching and learning process [21]. Literature review of Technology Enhanced Language Learning for foreign language learning revealed that most of the related robot applications for learning English have increased in recent years, especially in English for young learners [22]. Robots have also been used in English for young learners' classes to help with vocabulary learning and production [23]. One of the benefits of robots that has long been recognized by research is that it allows children to develop sensorimotor skills through interaction with real objects [24].

2. Educational Robotics Trends

Robot is a mechanical device capable of doing human work or behaving like human [25]. Robots are designed by humans to help humans in doing work that has high accuracy, high risk, and continuous with great power [26]. Based on the control process, robots are divided into two types, namely, automatic robots and robots teleoperation robots [27].

The last ten years have seen a remarkable rise in global interest in robotics. Many people believe that robotics can provide new advantages to education at all levels [28]. Likewise expanding is the market for educational robots. Researchers and practitioners in education have praised this system for its ability to increase upper-grade students' interest in and understanding of many subjects [29].

Since then, there has been a steady increase in the use of robotic technology in public schools [30] (Neumann). The use of a variety of robot applications to engage young people in learning a variety of subjects is now a trend in educational robotics [31]. English as a second or foreign language is one of the topics. Students who learn English as foreign language is the area where robot helpers have been utilized most frequently in Japan, Korea, China, and other nations seeking advancements in educational technology [32–35]. For young children, a plain computer screen devoid of social circumstances might not be as useful as a technological design that incorporates a social and interactive context. Children could acquire a language and literacy in a social and meaningful setting with a robot [36].

Recently, several business partners created a number of humanoid robots and investigated ways to use them to close the gap in education especially English for foreign language [37]. However, getting humanoid robots on the market for the general public has been significantly hampered by the expensive cost of production. Companies are vying to create more practical and cheap robots for use in classrooms as well as to create high-caliber robot apps to support English for young learners. EVOCE robot seems to open up a whole new area of possibilities for affordable, instructional robots by combining a smart phone, robot toy, and learning tool.

Robot-assisted language learning has been shown to be effective in reducing foreign language anxiety, and robot can help young learners learn English as a foreign language and improve their oral skills. Alemi et al. [22] conducted research with a robotic teaching assistant. Persian-speaking students in Iran were taught English as part of the research. A survey of the students revealed that those who learned from the robot were significantly less anxious than those who did not. While a variety of factors were thought to contribute to this reduction in anxiety, the authors claimed that intentional mistakes made by the robot were a major reason.

Thus, educational robots communicate with people in more human-like ways, such as through conversation, nonverbal clues, eye contact, and expressive expressions [38]. Back-channeling, attentive conduct, and vocal expressivity are just a few examples of the nonverbal cues that social robots use that young children are able to detect and respond to in rich ways [39].

From the studies mentioned above, the gap was difference between this study and other earlier studies that the EVOCE robot was implemented in increasing young learner students' vocabulary. The focus of the study, however, differs from the idea of the majority of the studies focused on English learning outcomes on cognitive development in English for young learners, when compared to other forms of technology [40].

Therefore, this research was conducted to examine the effect of EVOCE robot in students' vocabulary and the process of prototype design. The results of this study are expected to increase the teachers' understanding of using varieties media to increase students' development in English vocabulary.

The robot used in this paper is EVOCE robot. We say that this robot is as an interactive learning media for early childhood based on the result of pre and post test data displayed below, and this robot is utilized to develop young children's logical thinking skills. The given command buttons equipped on the robot made students try to notice, observe, and remember the steps to be made. The robot may be programmed to move forward, backward, turn left, or revolve endlessly. A prototype robot will then be created to give students and teachers an overview for educational purposes.

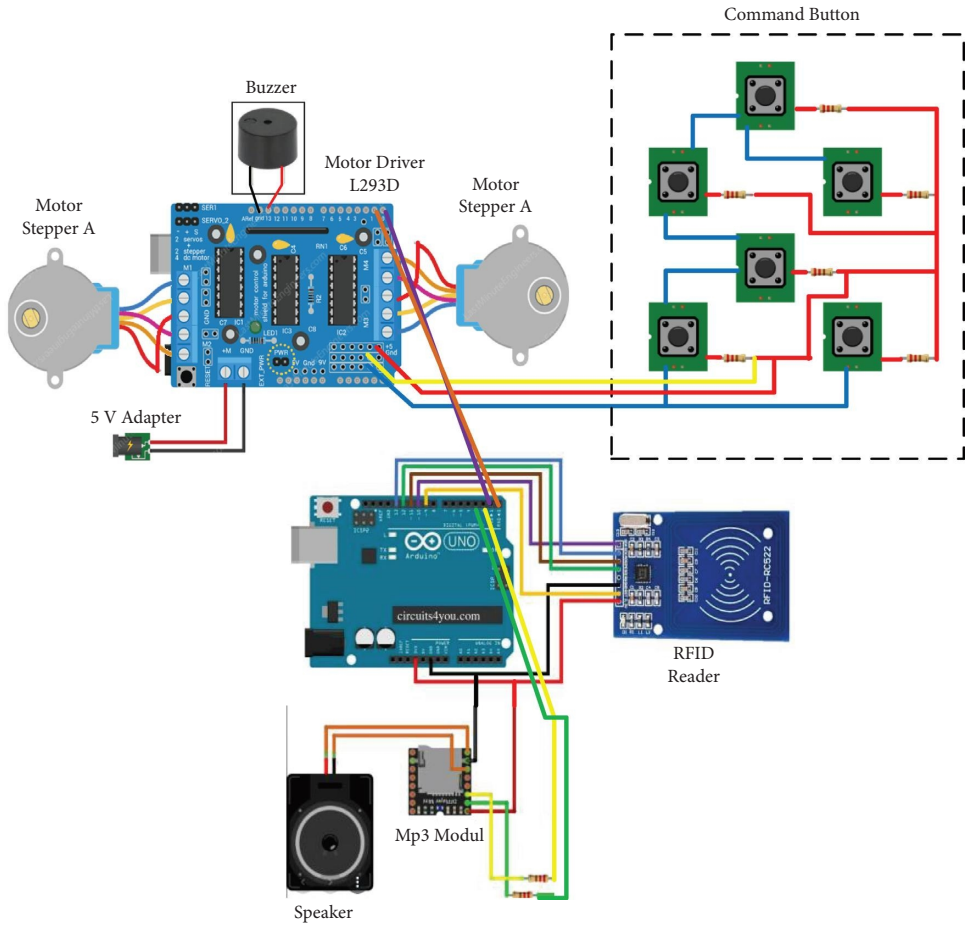

Figure 1: EVOCE robot prototype series.

3. Process of Design and Development

The research was carried out through a prototype modeling. The processes of needs analysis, design, product creation, testing, validation, and system implementation were used to build the Robot EVOCE prototype model.

3.1. Establishing Design Specifications. The robot system used in this study is composed of a number of electronic circuits that can be divided into three primary blocks, namely, input, process, and output blocks. See the illustration below for further information. See Figure 1.

There are two different forms of input media in the systems mentioned above, namely, command buttons and RFID sensors. The RFID sensor is a sensor that will eventually work to recognize or detect images on the mattress based on the ID number on the mattress, whereas the command button serves as a medium for interaction between the user and the robot.

3.1.1. Process Block. As the circuit's primary processing device or controller, the process block is made up of numerous Arduino microcontroller boards. Two Arduino microcontroller boards are employed in this study; one board processes and executes user-inputted commands, whereas the other board serves a different purpose. While the other board processes data from the RFID sensor and checks the ID number against the required sound file, the first board processes input from the RFID sensor.

3.1.2. Output Block. The output of this evoke robot system is a robot that moves from one location to another while making English-language sounds in response to the image of the mattress that is picked up by the ID number. This prototype can be used to teach English, particularly when introducing new vocabulary.

3.2. Hardware Design. The following circuits are utilized in hardware design:

3.2.1. Power Supply. This EVOCE robot runs on an 18650 3.7 volt type of lithium-ion battery. Three batteries are utilized, two of which are wired in series to act as the microcontroller's power source. While one provides power to the speakers using only pure batteries. See Figure 2.

3.2.2. Sensor. The sensor used to detect the code on the mattress is RFID type RC522 (see Figure 3). The function of the sensor is to read the ID number on the RFID sticker tag

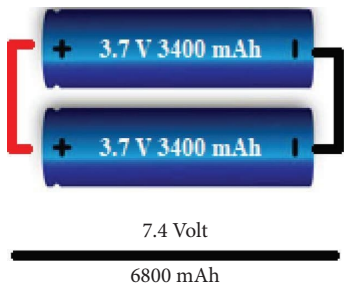

Figure 2: EVOCE robot power supply battery circuit.

mounted on the mat, so that the robot is able to identify the sound code that will be played according to the image on the mat.

3.2.3. Mechanical. Stepper motors are used in the robotic wheel drive system. By keeping track of the motor's steps, the usage of a stepper motor (see the Figure 4) attempts to make it easier to regulate the robot's distance traveled. A 90-degree rotation angle also makes it easier to control the robot's rotational direction.

3.2.4. Controller. As a robot controller circuit, this study used the Arduino uno r3 microcontroller board. The number of Arduino boards (see Figure 5) used is two. One Arduino board is used as a driving controller or robot mechanic, while the other is used to control the RFID sensor and sound module (see the details data in Table 1).

3.3. Software Design. Arduino IDE is software that is used to create programming sketches or in other words, Arduino IDE is a medium for programming on Arduino microcontrollers. Writing code/programs through Arduino IDE is done using C language. The program written on this Arduino device has the following functions:

(a) As a mechanical controller that drives the robot, the driver uses a mechanical stepper motor, as well as receives input from the user via the command button that has been provided. The commands on the button function to move the robot forward, backward, turn left, and turn right.

(b) The code/program written on the second Arduino microcontroller board functions to read the ID number on the mattress and then plays the mp3 file that matches the ID number obtained.

The programming step is also performed in this stage by providing the process of giving a computer (or a robot) a series of commands to make it do exactly what we want it to do. A programming language (see Figure 6) is a language that is understood by computers. It is made up of commands that can be entered into the computer. A program is made up of one or more command sequences. Computers run programs that are written in a programming language. EVOCE robot understands four different commands as follows: one that tells it to move one field forward, one that tells it to move two fields forward, and one that tells it to move three fields forward. There are four key concepts when we use EVOCE robot. First, it turns on the spot, not sideways; next, it moves in a straight line forwards and backwards; then, the more button presses you enter, the faster it moves, and last users must enter instructions precisely.

The children should be familiar with the EVOCE buttons and understand how to use them. EVOCE benefits from a mix of directed and free play time. Children may require some time to understand the clear button, move forward and backward, and turn left and right. They will also need to practice pressing the GO button once the EVOCE is ready to move. Most children benefit from being shown how to use the EVOCE. While some children will enjoy playing and figuring out how to make it work, many will become bored if EVOCE continues to do the wrong thing. The lear button is critical. Some teachers have discovered that telling some students that the clear button "helps tell EVOCE to listen to new commands" is beneficial.

Concepts commands are the fundamental actions that are preprogrammed into a coding language. EVOCE robot responds to six commands, namely, move forward, move backward, turn left, turn right, pause for 1 second, and then clear all commands. When commands are combined in a specific order, they form a program; then, the event in coding instructs your program to detect when something external occurs and to take action when it does. The only event that EVOCE robot can detect is when the "go" button is pressed. This button launches the program.

The press button starts the EVOCE robot to move while it is going through the line, and the EVOCE will pronounce the words it passes. There are three main topics to be produced by EVOCE robot while passing the mat, namely, school supplies, foods and drinks, and also clothes.

After having finished designing the EVOCE robot, the researchers continued the implementation of this robot in the classroom. The result of observing and experimenting with the robot is described in the next part.

4. Findings and Discussion

4.1. Pre-Experiment Activity. An EVOCE robot was created by the researchers. By identifying and speaking English words, this robot is utilized to develop young children's logical thinking skills. With the help of the given command buttons, the robot may be programmed to move forward, backward, turn left, or revolve endlessly. The robot's RFID sensor will be engaged when the command to move from box to box has been carried out, allowing it to read the ID number on the mat where the robot's location has stopped. Using the ID number that is read to identify the sound file, the robot will play the sound in English as shown in the illustration of the mat below.

The EVOCE robot prototype (Figure 7) is utilized as a tool for English-language acquisition when introducing vocabulary to young children, as well as for honing kids' logical thinking skills through straightforward programming. This learning model is one of the ones that can be used with STEM-based teaching strategies (science, technology, engineering, and mathematics).

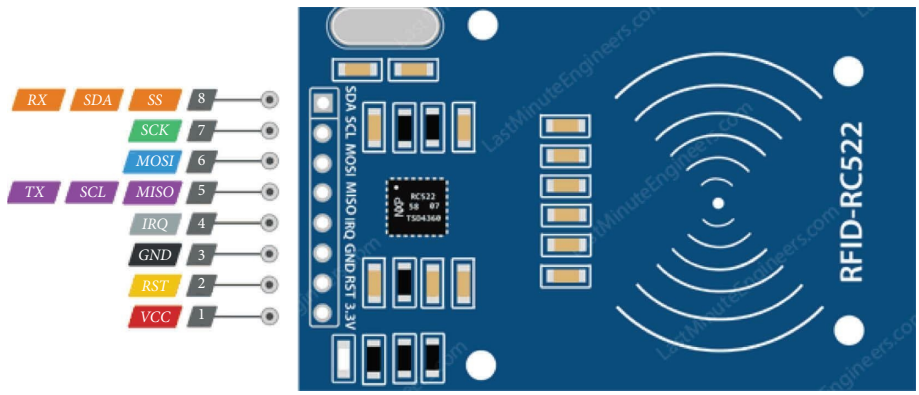

Figure 3: RFID RC522.

Figure 4: Stepper motor.

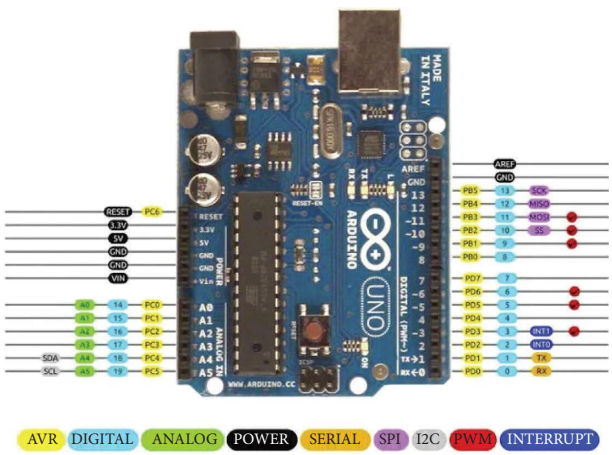

Figure 5: Arduino uno r3 board.

4.1.1. EVOCE Robot Prototype Test Result. Numerous tests were conducted, including tests of the sound module, the RFID sensor module, and the robot driving system. Testing of the entire system is done to see how well the robot prototype system has operated. The user can configure the robot's movement by pressing the forward (blue button up), backward (blue button down), turn left (white button next to left), and turn right buttons once the robot's memory has been cleared by pressing the clear button (red button) at the beginning of use (right white button). The next stage is to hit the green button to start the robot after entering a series of orders using the button. The robot will move in accordance with the preprogrammed command, and when it stops, it will scan the ID number on the mat directly underneath it in order to recognize it and play the appropriate sound file. The results of the EVOCE robot function test (Table 2) are shown as follows:

The percentage of error value can be determined from the validation functionality results in Table 3 using the following formula:

$$\text{Error\%} = \frac{9-9}{9}\, x\, 100\% = 0\,\%. \quad (1)$$

Thus, based on the results of the functional validation test, it can be categorized as functioning very well. In the left and right turn test, the robot does not have a precision of 900 rotation directions, but when moving forward or backward, the robot prototype does not come out of the mattress box measuring 20×20 cm, so it is concluded that the robot moves to the left or right with a level of precision that can still be tolerated.

4.1.2. Testing of the Robot Driving System. To make sure that the robot drive can be programmed and can operate in accordance with the program sequence that has been fed into the EEPROM memory, this drive system is tested (see Table 3). See the video of driving system test. A testing table for the EVOCE robotic driving system is shown as follows:

Based on the test results, it can be said that the robot prototype propulsion system is already capable of performing the determined functions and commands. The left motor propels the vehicle forward, while the right motor rotates in the opposite direction (CCW). When moving backwards, the left motor turns in a counterclockwise (CCW) direction, while the right motor turns in a clockwise direction (CW). Following that, the left and right motors rotate clockwise (CW) to move the prototype to the right and vice versa to move the prototype in the opposite direction (CCW).

4.1.3. Sound Module Testing. The sound module (DF Player Mini) is put to the test to determine the voltage that is generated when the DF Player Mini module plays the recorded sound on the SD memory card. See the video of sound module test. The voltage will be measured using a digital multitester. Table 4 shows the outcomes and test photos.

Table 1: Types of PINs and functions on Arduino uno R3.

PIN category	PIN name	Details
Strength	Vin, 5 V, 3.3 V, GND	Vin: input voltage to Arduino when using an external power source 5 V: the power supply used for the microcontroller board 3.3 V: voltage generated by the on-board regulator GND: ground
Reset	Reset	Resetting the microcontroller
Analog PIN	A10–A5	To provide an analog input of about 0–5 V
Input/output PIN	PIN digital 0–13	Adaptable to input and output PIN
PWM	3, 5, 6, 9, 11	To receive or transmit TTL serial data
SPI	10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK)	As an interrupt trigger
LED	13	Supplying 8-bit PWM output
TWI	A4 (9SDA), A5 (SCA)	As SPI communication
AREF	AREF	To turn on the LED light

Source: https://www.arduino.cc.

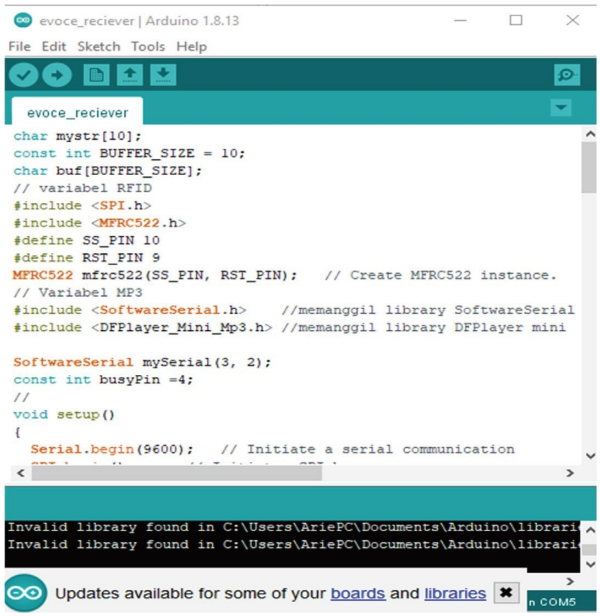

Figure 6: Arduino IDE EVOCE receiver.

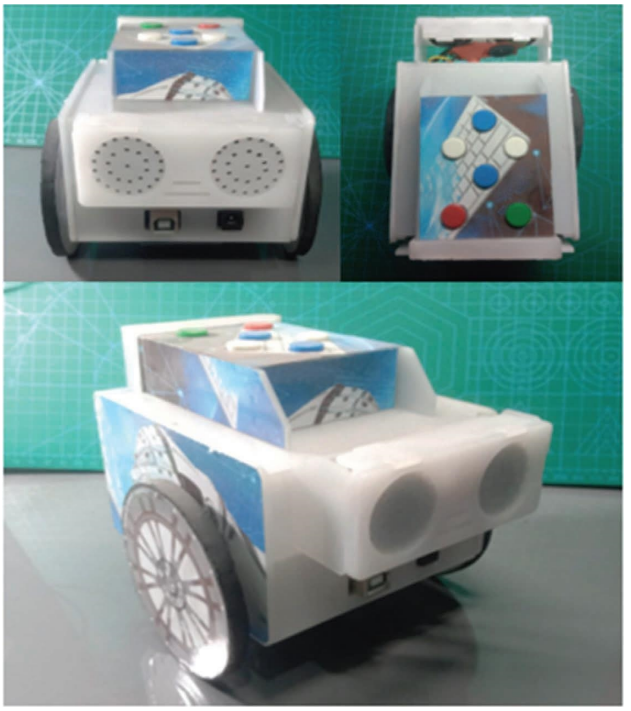

Figure 7: Exhibition of the EVOCE robotics prototype.

The result of sound module testing has shown that mini DF player module's test results show that a voltage of 0.694 volts is produced when an mp3 file is played on the device when it is used to play a mini DF player.

4.1.4. RC522 RFID Sensor Testing. RFID Card testing is carried out using a frequency emission sensor of electromagnetic waves issued from the RFID reader RC522. This experiment uses 2 RFID cards, one of which can be accepted and rejected through RFID card detection by verifying the ID number that has been obtained, one of which will be entered into the source code program of the entire tool. Testing the RFID card is by sticking one of the cards closer to the RFID reader rc522 at a distance of 1–3 cm. The first test that must be done is to read the detection of the RFID card received by the RFID Reader. The way to get the ID number stored from the RFID card is to run the program on the Arduino IDE through the sample provided from the RFID card sales source who has provided a special library for testing the RFID card. The pins connected to Arduino and loaded in the Arduino IDE program have been set, that is, pin D10 as SS (Software Serial) and pin D9 as Reset pin. This is done to test whether the RFID card can be detected on the serial monitor by attaching the RFID card to the RFID Reader. After obtaining the ID number on the card, the next step is to make a comparison logic by comparing the ID number obtained with the ID number data in the program. If the ID number is found, the sound of the mp3 file will be played through the DFPlayer mini module, while if the ID number is not found, the system does not respond. The following Table 5 is a RFID test samples:

Table 2: Types of PINs and functions on arduino uno R3.

No.	Requirements tested test items	Test results	
		Yes	No
Arduino 1	Is EEPROM memory capable of holding commands?	✓	
Arduino 1	When the green button is pressed, can the data stored in the EEPROM memory be retrieved?	✓	
Arduino 1	When the red button is pressed, is the data in the EEPROM memory deleted?	✓	
Arduino 2	Is the ID number detectable by the sensor module?	✓	
Arduino 2	Are the speakers capable of playing mp3 audio files?	✓	
Left stepper	Does the stepper motor rotate in the predetermined direction?	✓	
Right stepper	Does the stepper motor rotate in the predetermined direction?	✓	
Move forward and backward	Can the prototype robot go forward and backward?	✓	
Turn left and right	Can the prototype robot rotate 90 degrees left or right?	✓	

Table 3: Test of the robot drive system.

No	Order of command	Motor movement		Robot prototype motion
		Left motor	Right motor	
1		CW	CCW	Move forward
2		CCW	CW	Moving backward
3		CW	CW	Move around to the right
4		CCW	CCW	Move around to the left

Table 4: Sound module testing (mini DF player).

Trial No.	Mini DF player module status	Length of time	Voltage (V)	Description
1	Receiving no responses	0	0.088	Sound DF player off
2	Getting response	5	0.694	Sound DF player on

Pretest was held in this session. Two groups (control and experiment class) were having vocabulary test. Both classes got basic vocabulary test.

4.2. Experiment Activity. Over a two-week period, there were four sessions of the experiment. The experiment group members got the opportunity to operate the EVOCE robot. About 20 of the 40 students present in each session operated with robots. The topics given varied from school supplies, foods and drinks, and clothes. The robot was available for all of the students to be operated and inquire about words' meanings. This was only applicable to the experiment class, while the control class was not using the robots.

4.3. Postexperiment Activity. The post-test was given to the students after the experiment finished. On the same day, both group (control and experiment class) completed the vocabulary test. Overall, the methodical process took a month to complete and covered all of the key steps.

4.4. Data Analysis. The SPSS version 23 program was used to analyze the quantitative data. The outcomes of the post-test were compared to those of the pretest using the independent samples *t*-test. The data from the observational method were examined to produce descriptive statistics which have been described above. Regarding the research questions, the results are presented as follows:

Table 5: Testing the RC522 RFID RFID sensor.

No.	Id number	Condition	Action
1	24 BD 27 CD	Found	Sound file 0001.mp3 played
2	81 B4 E0 26	Found	Sound file 0002.mp3 played
3	E5 D2 98 EE	Not found	No respond

Table 6 shows that for control class, there was no significant difference between the average post-test results (74.25) and the average pretest results (70.00). It signifies that the control class has a 4.25 point difference between pretest and post-test that is slightly different.

The data in Table 7 showed that in the average results of pretest and post-test in the experimental class, there was a difference, where the post-test results were higher (78.85) than the pretest results (71.50). It means that there was a slightly significant effect of using the EVOCE robot in the experiment class.

Table 8 result showed that based on $df = 20 - 1 = 19$ at a significant level of 5%, a *t*-table of 1,729 is obtained and at

Table 6: Paired samples statistics control class.

		Mean	N	Std. deviation	Std. error mean
Pair 1	Pretest control	70.0000	20	7.94719	1.77705
	Post-test control	74.2500	20	7.12206	1.59254

Table 7: Paired samples statistics experiment class.

		Mean	N	Std. deviation	Std. error mean
Pair 1	Pretest experiment	71.5000	20	8.59927	1.92285
	Post-test experiment	78.8500	20	8.43723	1.88662

Table 8: Paired samples T-test.

		Paired differences							
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Post-test control-post-test experiment	−4.60000	12.24917	2.73900	−10.33279	1.13279	−1.679	19	0.109

a significant level of 1%, a t_{tabel} of 1.328 is obtained. A t_{count} of 1.679 means that it is greater than t_{tabel} at a significant level of 5%, while at a significantly smaller level of 1% ($1.729 < 1.679 > 1.328$), H0 is rejected and Ha is accepted. In other words, there is a significant difference between student learning outcomes between the pre-test in the experimental class and the post-test in the experimental class at a significance level of 5%.

From the significance value (2-tailed) between the pretest and post-test values, a value of 0.109 is obtained, which means it is greater than 0.05. It can be concluded that there is no difference in the results between the control class post-test and the experimental class post-test.

5. Discussion

There were two main objectives to be explained in this part. The first was about the prototype EVOCE microcontroller circuit, which is powered by two separate sections. The Arduino Uno R3 series board was the microcontroller board that was utilized as a robot control system [41].

The second objective was to find out whether the EVOCE robot contributed to the impact on the students' score on vocabulary. The current study did not uncover a significant difference between the two groups' performances in vocabulary learning. Nevertheless, both groups significantly increased their vocabulary, which is in line with other research done by Schodde et al. [42]. The result of students score in learning vocabulary did not show the effect significantly, which is somewhat better in terms of the mean scores, which is different from the findings of Alemi et al. [43] who used the same robot design process, and next was the impact of this robot towards the achievement of students' vocabulary. The research result showed that concepts commands are the fundamental actions that are preprogrammed into a coding language. The EVOCE robot responds to six commands as given as follows: move forward, move backward, turn left, turn right, pause for 1 second, and then clear all commands. When commands are combined in a specific order, they form a program; then, the event in coding instructs your program to detect when something external occurs and to take action when it does. The only event that the EVOCE robot can detect is when the "go" button is pressed. This button launches the program. These steps made students more creative and innovative, and the robots were used as interactive learning media for early childhood [17, 24].

There are three main topics to be produced by the EVOCE robot while passing the mat, namely, school supplies, foods and drinks, and also clothes [44]. One piece is especially utilized to deliver voltage to the speakers, while the driving motor and robot function with a group of school-aged participants. There could be a number of causes for this result.

First factor was that the students in this study were younger than those in other studies, which is a difference in the achievement result score [41, 45]. This finding of the EVOCE robot contributed to a slight effect on students' achievement.

Second factor was that the function and the program of the EVOCE robot prototype sometimes did not work properly, so some students were difficult to catch the sound of vocabulary produced by the robot. This result correlated with [6, 38] (Levine) findings that product of robot needed more overview of the additional program, and thus the operation runs smoothly.

Third factor was that this EVOCE robot was quite new introduced to the students. Thus, the acceptance and the training took a little bit longer and made the students frustrated getting the new English vocabulary, although

robot was attracting them to play and study but the psychological factor affected their mood in learning foreign language [2].

6. Conclusion

Based on the results of the study, it can be concluded that the goal of this study was to ascertain whether using robots may affect young language learners' vocabulary acquisition and the process toward using such technology. Data that were both quantitative and qualitative were thus gathered. Since participants in both groups achieved comparable progress in vocabulary learning, the quantitative data analysis did not identify statistically. This result may be explained by a number of important factors including the novelty of the technology used, the participants' limited prior interaction with the robot, issues with voice recognition and speech rate that were reported, students' poor listening skills, individual differences, and reported technical difficulties. Different reactions to the technology could have been caused by these variables. Additional research is required to further understand how many circumstances affect the results of this experiment because this study was limited to one. It is hoped that in the next stage of research, the robotic microcontroller circuit can be made to be a minimum size so that the size of the robot can be reduced again. In addition, the robot drive system should use a gearbox so that it can increase the RPM of the stepper motor. It is hoped that the smaller robot design and the increased movement speed of the robot can make this EVOCE robot prototype a superior product in learning vocabulary recognition in early childhood.

Data Availability

The data used to support the findings of this study are available at https://link.springer.com/article/10.1007/s12369-015-0286-y, https://www.semanticscholar.org/paper/Using-Games-as-a-Tool-in-Teaching-Vocabulary-to-Bakhsh/b940275fe6ffcb19dfced1364abc38df9a4068fe, https://www.cambridge.org/core/journals/language-teaching/article/abs/language-learning-in-mindbodyworld-a-sociocognitive-approach-to-second-language-acquisition/F8F022E944921041EE09639D69302694, https://onlinelibrary.wiley.com/doi/abs/10.1111/jcal.12469, https://www.mdpi.com/2227-7102/12/7/437, https://www.sciencedirect.com/science/article/abs/pii/S0360131518302033, https://link.springer.com/article/10.1007/s11528-021-00637-1, https://www.mdpi.com/2227-7102/11/11/709/html, https://dl.acm.org/doi/10.1145/3025453.3025735, https://archive.org/details/robotbuildersbon00mcco/page/n7/mode/2up, https://www.lltjournal.org/item/948/https://onlinelibrary.wiley.com/doi/abs/10.1111/modl.12691https://dl.acm.org/doi/10.1145/2909824.3020245, https://academic.oup.com/eltj/article-abstract/63/2/173/441531?redirectedFrom=fulltext, https://onlinelibrary.wiley.com/doi/10.1002/cae.20347, https://www.frontiersin.org/articles/10.3389/fnhum.2017.00295/full, https://www.odbms.org/2017/08/artificial-intelligence-the-next-digital-frontier-mckinsey-global-institute-study/, https://www.frontiersin.org/articles/10.3389/frobt.2017.00047/full, https://ioinformatics.org/journal/v11_2017_143_150.pdf, https://link.springer.com/article/10.1007/s12369-014-0277-4, https://onlinelibrary.wiley.com/toc/15404781/2020/104/S1https://www.sciencedirect.com/science/article/abs/pii/S0346251X21002451https://www.goodreads.com/book/show/9901946-practical-english-language-teachinghttps://www.je-lks.org/ojs/index.php/Je-LKS_EN/article/view/1135005https://www.routledge.com/Coding-as-a-Playground-Programming-and-Computational-Thinking-in-the-Early-Bers/p/book/9780367900502. https://link.springer.com/article/10.1007/s10643-019-00997-7https://dl.acm.org/doi/10.1145/3345506, https://doi.org/10.1145/3290605.3300677https://dl.acm.org/doi/10.1145/3290605.3300677, https://link.springer.com/chapter/10.1007/978-3-031-15273-3_17https://dl.acm.org/doi/10.1145/3078072.3084330, https://www.tandfonline.com/doi/abs/10.1080/10494820.2020.1780269?journalCode=nile20, https://www.frontiersin.org/articles/10.3389/fnhum.2017.00073/full, https://www.sciencedirect.com/science/article/abs/pii/S2212868916300538, https://onlinelibrary.wiley.com/doi/abs/10.1002/cae.22321, https://www.academia.edu/48863431/Distance_Education_in_China_Issue_5_2021_Table_of_Contents_Abstracts_of_Major_Articles_in_English, and https://www.tandfonline.com/doi/abs/10.1080/10494820.2020.1786409?journalCode=nile20.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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