



Appendix 1. Game Media Expert Test Instrument

Game Media Expert Test

DEVELOPMENT OF A BALINESE TRADITION AND RITE QUIZ GAME WITH TEXT TO SPEECH FEATURE

Evaluator :

Profession :

Day, date :

Instructions:

Please give a sign (√) in the assessment column that is already available.

The assessment consists of two alternatives.

- **Relevant** : If the instrument is in accordance with the assessed aspect.
- **Irrelevant** : If the instrument is not in accordance with the assessed aspect.

If there are suggestions or inputs, you can include them in the notes column that has been provided.

No	Grain Valuation	Conformity Level					Reason
		1	2	3	4	5	
1	The size of the symbol (button, frame) is appropriate	o	o	o	o	o	
2	Symbol placement (buttons, frames) is appropriate	o	o	o	o	o	
3	Font types and sizes on easy-to-read media	o	o	o	o	o	

4	Text colors used on media are easy to read	☐	☐	☐	☐	☐	
5	The composition of the images in the media is appropriate	☐	☐	☐	☐	☐	
6	The size and quality of the images displayed on the media are appropriate	☐	☐	☐	☐	☐	
7	The accuracy of the placement of images on the media is appropriate	☐	☐	☐	☐	☐	
8	Animation fit with the material	☐	☐	☐	☐	☐	
9	The selection of animations is already interesting	☐	☐	☐	☐	☐	
10	The backsound used is in accordance with the material	☐	☐	☐	☐	☐	
11	The sound effects used are in accordance with the animation	☐	☐	☐	☐	☐	
12	The cover in the learning media is appropriate	☐	☐	☐	☐	☐	
13	The display of learning media with the content of the material is appropriate	☐	☐	☐	☐	☐	
14	Flexibility of learning media (can be used independently and guided)	☐	☐	☐	☐	☐	
15	Instructions for the use of learning media are appropriate	☐	☐	☐	☐	☐	
16	Complete instruction usage	☐	☐	☐	☐	☐	
17	The ease of operation of learning media is appropriate	☐	☐	☐	☐	☐	
18	The use of navigation buttons on learning media is appropriate	☐	☐	☐	☐	☐	
19	The consistency of the shape and position of navigation in the media is appropriate	☐	☐	☐	☐	☐	
20	Media functionality is appropriate	☐	☐	☐	☐	☐	
Total							

Suggestion:

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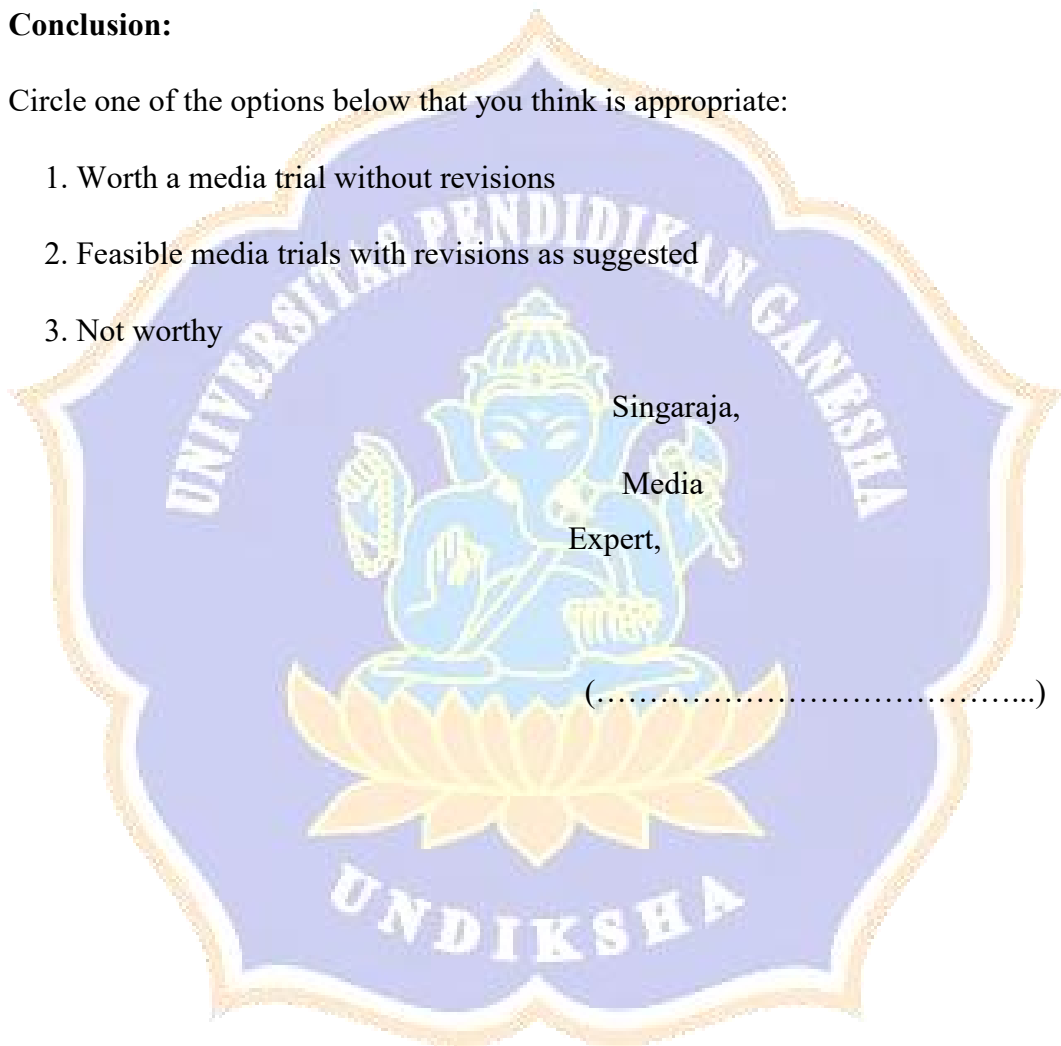
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Conclusion:

Circle one of the options below that you think is appropriate:

1. Worth a media trial without revisions
2. Feasible media trials with revisions as suggested
3. Not worthy



Appendix 2. Expert Test Instrument

Content Expert Test

DEVELOPMENT OF A BALINESE TRADITION AND RITE QUIZ GAME WITH TEXT TO SPEECH FEATURE

Validator :

Profession :

Day, date :

Instructions:

Please give a sign (√) in the assessment column that is already available.

The assessment consists of two alternatives.

- **Relevant** : If the instrument is in accordance with the assessed aspect.
- **Irrelevant** : If the instrument is not in accordance with the assessed aspect.

If there are suggestions or inputs, you can include them in the notes column that has been provided.

No	Indicator Research	Grain Valuation	Revelansi	
			Relevant	Irrelevant
1	Content Quality	The content of the material is in accordance with the purpose of introducing Balinese traditions and rites.		
		The quiz material used in the quiz educational		

		game is valid.		
		In-game activities can support users to gain insight into Balinese traditions and rites.		
		The content of the game can foster the spirit of preserving Balinese traditions and rites among the younger generation.		
		The content of the material does not contain ambiguity.		
2	Relevance to Target Audience	The language used corresponds to the user's level of understanding.		
		The material presented can provide information about more complex traditions and rites.		
		Different stage elements are able to increase the player's interest in learning more about Balinese traditions and rites		
		The difficulty level of the quiz material is according to the age and ability of the user.		
		Games are relevant to the interests and needs of the younger generation in this era.		

Suggestion:

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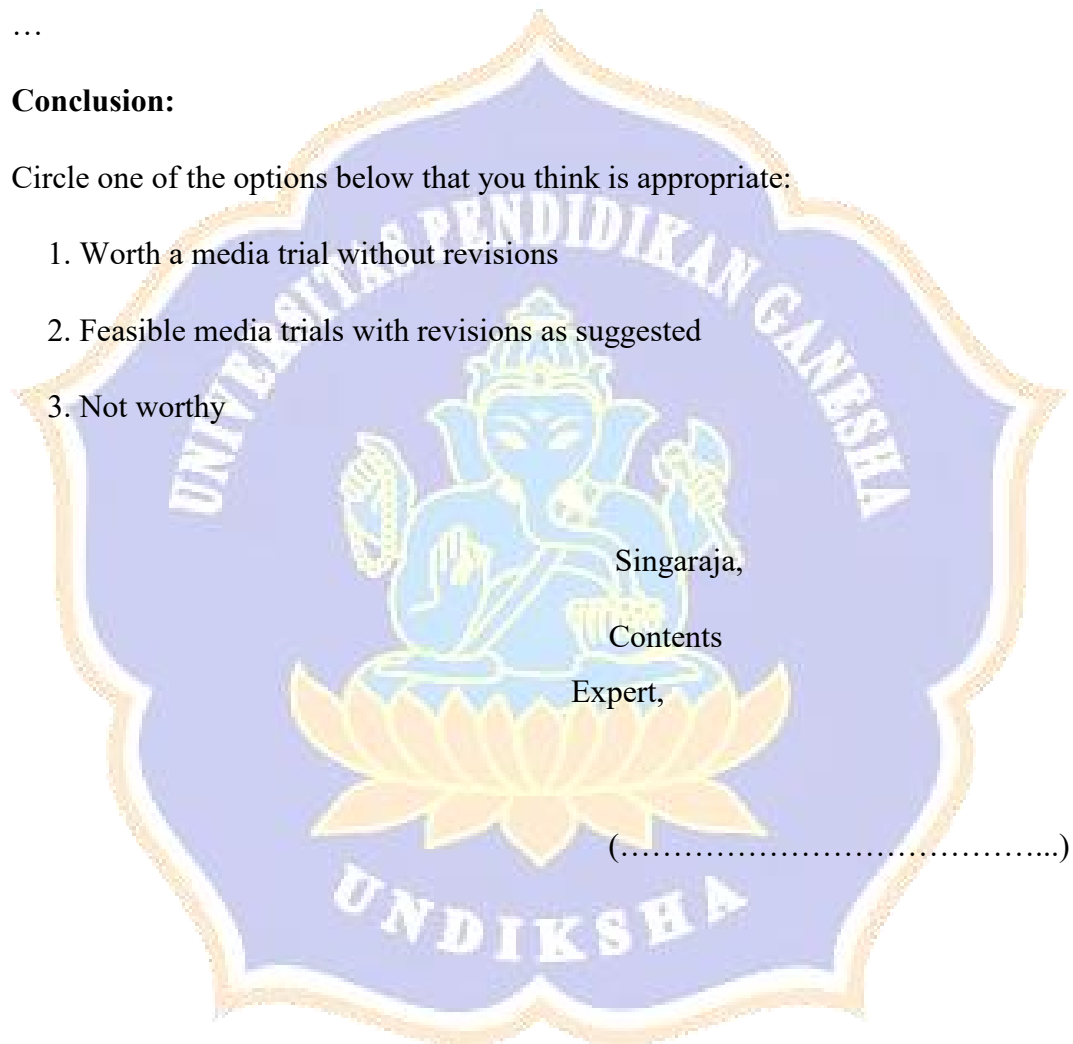
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...

Conclusion:

Circle one of the options below that you think is appropriate:

1. Worth a media trial without revisions
2. Feasible media trials with revisions as suggested
3. Not worthy



[illegible]

6	Good	☐	☐	☐	☐	☐	☐	☐	Bad
7	Complicated	☐	☐	☐	☐	☐	☐	☐	Simple
8	Inefficient	☐	☐	☐	☐	☐	☐	☐	Efficient

Suggestion:

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Appendix 4. Mean Opinion Score Test Instrument

Mean Opinion Score Test

DEVELOPMENT OF A BALINESE TRADITION AND RITE QUIZ GAME WITH TEXT TO SPEECH FEATURE

Respondent's Identity

Name :

Gender : L/P

Age :

Instructions:

Respondents are invited to listen to an audio sample before completing the questionnaire. You can rate the audio quality by ticking (√) in the circle for each available row of assessment items. The higher the level of agreement selected, the more it indicates that you agree; conversely, the lower the level of agreement, the more it indicates that you disagree.

No	Indicator	Conformity Level				
		1	2	3	4	5
1	How natural does the resulting voice sound like a human?	☐	☐	☐	☐	☐
2	How clear is the pronunciation of the words in the audio?	☐	☐	☐	☐	☐
3	How natural is the intonation (rise and fall of pitch) in the sentence?	☐	☐	☐	☐	☐
4	How comfortable is the sound to hear (without disturbing noise)?	☐	☐	☐	☐	☐
5	Overall, how is the sound quality?	☐	☐	☐	☐	☐

Suggestion:

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...



Appendix 5. Question List

Apa nama upacara potong gigi dalam tradisi Bali?

- A. Metatah
- B. Ngaben
- C. Melasti
- D. Otonan

Ngaben adalah upacara untuk...

- A. Menyucikan bayi yang baru lahir
- B. Menikahkan pasangan muda
- C. Mengembalikan unsur panca maha bhuta ke sang pencipta
- D. Memberkati rumah baru

Upacara Melasti dilakukan menjelang...

- A. Hari Raya Galungan
- B. Hari Raya Nyepi
- C. Hari Saraswati
- D. Hari Pagerwesi

Hari Raya Galungan dirayakan sebagai peringatan...

- A. Kemenangan Dharma atas Adharma
- B. Hari kelahiran Dewa Brahma
- C. Hari panen padi
- D. Permulaan tahun Saka



Banten adalah istilah dalam tradisi Bali yang merujuk pada...

- A. Tarian perang
- B. Sesajen atau persembahan
- C. Lagu keagamaan
- D. Jenis gamelan

Hari Raya Nyepi dirayakan dengan cara...

- A. Festival musik dan tari
- B. Pawai ogoh-ogoh
- C. Berdiam diri dan tidak melakukan aktivitas
- D. Berziarah ke pura besar

Otonan adalah upacara yang dilaksanakan untuk memperingati...

- A. Kematian leluhur
- B. Hari lahir seseorang berdasarkan wuku
- C. Awal musim panen
- D. Pergantian tahun

Ogoh-ogoh biasanya dibuat dan diarak menjelang...

- A. Hari Raya Kuningan
- B. Hari Raya Nyepi
- C. Hari Saraswati
- D. Hari Pagerwesi



Upacara Dewa Yadnya ditujukan kepada...

- A.Leluhur
- B.Roh jahat
- C.Dewa-Dewa
- D.Raja yang telah wafat

Upacara Melaspas biasanya dilakukan saat...

- A.Menanam padi
- B.Menempati rumah baru
- C.Menikah
- D.Menyambut kelahiran

Ngusaba adalah upacara yang bertujuan untuk...

- A.Mengusir penyakit
- B.Memohon hasil bumi yang melimpah
- C.Memanggil hujan
- D.Menghormati raja

Apa nama upacara yang dilakukan sebelum seseorang menjadi pendeta Hindu di Bali?

- A.Ngeruak
- B.Melaspas
- C.Diksha
- D.Ngaben

Upacara Melaspas bertujuan untuk...



- A. Mengubur abu jenazah
- B. Membersihkan dan menyucikan bangunan baru
- C. Merayakan panen
- D. Menikahkan anak

Upacara Pitra Yadnya berkaitan dengan...

- A. Dewa Laut
- B. Roh leluhur
- C. Dewa Agni
- D. Dewa Siwa

Apa tujuan dari upacara Tumpek Landep?

- A. Memberkati senjata dan benda logam
- B. Menyambut kelahiran
- C. Membersihkan pura
- D. Memberkati air suci

Tumpek Uduh adalah upacara untuk menghormati...

- A. Laut
- B. Pepohonan dan tumbuhan
- C. Ternak
- D. Leluhr

Tradisi "mesangih" dikenal juga sebagai...

- A. Upacara potong rambut



- B.Potong gigi
- C.Mandi suci
- D.Penyucian pura

Hari Raya Kuningan jatuh 10 hari setelah...

- A.Nyepi
- B.Galungan
- C.Saraswati
- D.Pagerwesi

Upacara Nelu Bulanin dilakukan saat bayi berusia...

- A.21 hari
- B.105 hari
- C.3 tahun
- D.7 bulan

Apa nama upacara untuk memohon keselamatan saat membangun rumah?

- A.Ngenteg Linggih
- B.Ngeruak
- C.Melaspas
- D.Mecaru

Hari Raya yang dilakukan pada saat saniscara umanis watu gunung bertujuan untuk menghormati...

- A.Dewa Siwa
- B.Dewa Brahma



C.Dewi Saraswati

D.Dewi Gangga

Upacara Bhuta Yadnya ditujukan kepada...

A.Leluhur

B.Dewa-Dewa

C.Roh halus dan makhluk rendah

D.Tamu undangan

Makna dari simbol "canang sari" adalah...

A.Makanan untuk roh

B.Persembahan untuk raja

C.Hiasan pura

D.Simbol keseimbangan antar manusia, Tuhan dan alam semesta

Upacara Eka Dasa Rudra dilakukan di...

A.Pura Tanah Lot

B.Pura Uluwatu

C.Pura Ulun Danu

D.Pura Besakih

Makna dari upacara mecaru adalah...

A.Untuk menjaga, mengharmoniskan hubungan antara manusia dengan alam lingkungan sekitarnya

B.Mengubur jenazah

C.Menyambut tamu



D.Menikahkan pasangan

Setelah mendirikan pelinggih baru, ada upacara yang dilakukan untuk menstanakan ida betara beserta manifestasinya yang di sebut dengan?

- A.Ngeruak
- B.Melaspas
- C.Ngenteg Linggih
- D.Mecaru

Tari Rejang Dewa dilakukan saat...

- A.Upacara adat
- B.Penyambutan tamu
- C.Pertunjukan seni
- D.Ditarikan saat upacara Dewa Yadnya

Apa fungsi dari upacara Melaspas?

- A.Mengusir roh jahat
- B.Menyambut tamu
- C.Memulai panen
- D.Menyucikan bangunan baru

Upacara yang dilaksanakan sebagai pengukuhan atau pengesahan janji maupun ucapan seseorang yang telah datang dengan tulus Ikhlas tanpa adanya paksaan untuk memeluk agama hindu disebut?

- A.Sudhi Wedani



- B.Ketus Puser
- C.Metatah
- D.Mewinten

Upacara potong gigi bertujuan untuk...

- A.Menghilangkan sifat buruk
- B.Mempercantik wajah
- C.Menyucikan kaki
- D.Merayakan ulang tahun

Apa yang dimaksud dengan Banten?

- A.Tarian Bali
- B.Sajian persembahan
- C.Upacara kematian
- D.Senjata tradisional

Tumpek Kandang ditujukan kepada...

- A.Dewa Laut
- B.Binatang ternak
- C.Tumbuhan
- D.Roh leluhur

Apa makna dari upacara Galungan?

- A.Hari panen raya



- B. Hari ulang tahun pura
- C. Hari perdamaian
- D. Kemenangan dharma atas adharma

Penjor biasanya dipasang saat...

- A. Tumpek Landep
- B. Kuningan
- C. Hari raya Penampahan Galungan
- D. Nyepi

Makna simbolik dari Penjor adalah...

- A. Ucapan selamat
- B. Tempat persembahan
- C. Lambang Gunung
- D. Alat music

Empat hari setelah hari raya Saraswati, diperingati sebagai hari raya...

- A. Soma ribek
- B. Pagerwesi
- C. Kajeng Kliwon
- D. Kuningan

Tradisi Makepung merupakan tradisi khas dari kabupaten...

- A. Badung
- B. Karangasem



C.Jembrana

D.Buleleng

Perang pandan sebagai bentuk persembahan bagi Dewa Indra dikenal dengan nama...?

A.Mekare-kare

B.Megoak-goakan

C.Mesbes Bangke

D.Makotek

Tradisi arak-arakan jempana dalam rangka keagamaan dikenal dengan sebutan...?

A.Siat Yeh

B.Omed-omedan

C.Perang Jempana

D.Saba Yadnya

Tradisi ciuman masal yang dilakukan di Banjar Kaja, Sesetan, Denpasar dikenal dengan nama...?

A.Omed-omedan

B.Siat Yeh

C.Mekotek

D.Mesbes Bangke

Tradisi mengarak ogoh-ogoh sebelum Hari Raya Nyepi disebut...?

A.Melasti



- B.Tawur Kesanga
- C.Ngerupuk
- D.Saraswati

Tradisi Mapeed adalah kegiatan arak-arakan perempuan membawa apa di atas kepala?

- A.Payung
- B.Peralatan upacara
- C.Banten/Gebogan
- D.Barong

Apa tujuan dari upacara Melukat?

- A.Menyambut kelahiran anak
- B.Membersihkan diri secara spiritual
- C.Mengantar roh ke alam baka
- D.Menghormati leluhur

Apa makna dari upacara Melasti?

- A.Pembersihan alat upacara dan diri secara lahir batin
- B.Memberkati makanan
- C.Menyambut hari panen
- D.Memperkenalkan budaya

Ogoh-ogoh melambangkan...

- A.Dewa kebaikan
- B.Roh leluhur
- C.Sifat buruk manusia



D.Dewa pertanian

Upacara Manusa Yadnya berkaitan dengan...

- A.Kehidupan manusia dari lahir sampai mati
- B.Alam semesta
- C.Roh halus
- D.Penyucian pura

Hari Raya Galungan dirayakan setiap...

- A.10 hari sekali
- B.210 hari menurut kalender Bali
- C.Setiap purnama
- D.1 tahun sekali

Tradisi Megibung adalah tradisi makan bersama yang berasal dari...

- A.Badung
- B.Klungkung
- C.Jembrana
- D.Karangasem

Siapa yang memimpin upacara keagamaan besar di Bali?

- A.Ida Pedanda
- B.Jero Mangku
- C.Bendesa
- D.Ketua Banjar



Tari Baris menggambarkan...

- A. Cinta kasih
- B. Keindahan alam
- C. Kepahlawanan dan keberanian
- D. Kesedihan mendalam

Apa nama upacara bertujuan untuk lebih memurnikan atma dan melepaskan ikatan dengan Panca Tan Matra?

- A. Melasti
- B. Ngelinggihang
- C. Nyekah
- D. Mecaru

Penampahan galungan adalah?

- A. Menyambut Galungan
- B. Kegiatan gotong royong
- C. Hari di mana umat Hindu menyembelih hewan sebagai simbol pengendalian nafsu.
- D. Musyawarah banjar

Pada hari Nyepi, umat Hindu Bali melaksanakan Catur Brata Penyepian, salah satunya adalah...

- A. Mengadakan pesta
- B. Melakukan perjalanan wisata

- C. Tidak bekerja
- D. Menghias Pura

Tradisi "ngekeb" dilakukan sebelum...

- A. Melasti
- B. Ngaben
- C. Metatah
- D. Pernikahan

Ritual "ngeroras" adalah bagian dari...

- A. Ngaben
- B. Upacara Melasti
- C. Metatah
- D. Tumpek Wayang

"Taksu" dalam kepercayaan Bali berarti...

- A. Wewenang
- B. Kecantikan
- C. Warisan keluarga
- D. Karisma atau kekuatan spiritual

Tradisi Mekare-kare yang menggunakan daun pandan dilakukan di...?

- A. Tenganan
- B. Ubud
- C. Aan
- D. Denpasar



Nama lain dari upacara potong gigi dalam budaya Bali adalah...?

- A.Melukat
- B.Mejejaitan
- C.Melaspas
- D.Metatah

Tradisi Ngusaba Nini merupakan bentuk rasa syukur atas...?

- A.Laut
- B.Kelahiran
- C.Kesehatan
- D.Hasil panen

Tradisi Siat Sampian menggunakan?

- A.Daun kelapa
- B.Daun pandan
- C.Bunga kamboja
- D.Tanah liat

Tradisi ngelawang biasanya melibatkan pertunjukan...?

- A.Gong kebyar
- B.Wayang kulit
- C.Barong
- D.Tari kecak



Tradisi Mesabatan Biu merupakan perang menggunakan...?

- A.Pisang
- B.Bunga
- C.Air
- D.Lumpur

Tradisi keramaian yang digelar di Pura Petilan, Kesiman setiap 210 hari setelah Hari Raya Kuningan disebut...?

- A.Ngerebong
- B.Omed-omedan
- C.Ngelawang
- D.Melasti

Tradisi yang memungkinkan seorang laki-laki masuk ke dalam garis keluarga istri dalam sistem kekerabatan Bali disebut...?

- A.Ngerorod
- B.Ngekeb
- C.Nyentana
- D.Ngidih

Tradisi Perang Pandan yang berlangsung di Desa Tenganan Pegringsingan merupakan bentuk penghormatan kepada...?

- A.Dewa Wisnu
- B.Dewa Brahma
- C.Dewa Bayu



D.Dewa Indra

Tradisi Mebayang-bayang yang dilakukan dengan menarik kulit anak sapi (belulang godel) secara bergantian dilakukan di Desa Adat...?

- A.Trunyan
- B.Sengkiding, Desa Aan, Banjarangkan
- C.Penglipuran
- D.Tenganan

Tradisi Mekotek dilaksanakan bertepatan dengan hari raya apa?

- A.Hari Raya Nyepi
- B.Hari Raya Galungan
- C.Hari Raya Kuningan
- D.Pagerwesi

Tradisi tajen yang kontroversial di Bali biasanya merujuk pada...?

- A.Perang pandan
- B.Tari kecak
- C.Barong ket
- D.Sabung ayam

Tradisi Magoak-goakan dilakukan di daerah?

- A.Jembrana
- B.Buleleng
- C.Denpasar



D.Tabanan

Tradisi mesuryak dilakukan oleh warga di Kabupaten...?

A.Tabanan

B.Jembrana

C.Klungkung

D.Bangli

Ritual “Nyekah” biasanya dilakukan setelah...?

A.Kelahiran

B.Perkawinan

C.Metatah

D.Ngaben

Apa nama hari suci untuk menghormati ilmu pengetahuan dalam budaya Bali?

A.Tumpek Landep

B.Pagerwesi

C.Saraswati

D.Kuningan

Apa nama upacara menjelang pernikahan di Bali?

A.Metatah

B.Mewinten



- C.Melasti
- D.Mapadik

Apa yang dimaksud dengan "Caru"?

- A.Banten untuk manusia
- B.Persembahan kepada bhuta kala
- C.Alat musik tradisional
- D>Nama tari sakral

Upacara "Mewinten" ditujukan untuk...?

- A.Anak-anak
- B.Orang biasa
- C.Calon pemangku
- D.Roh leluhur

Dalam permainan Tajog, pemain menggunakan alat berupa...?

- A.Sepasang bambu panjang
- B.Bola plastik
- C.Terompah besar
- D.Tali panjang

Permainan yang mengharuskan pemain berlari sambil melompat di atas bambu yang digerakkan disebut...?

- A.Megala-gala
- B.Meong-meongan
- C.Tajog



D.Cag-cag

Permainan "Meong-meongan" di Bali biasanya dimainkan dengan cara...?

- A.Melempar bola ke dalam keranjang
- B.Berlari sambil menghindari sentuhan
- C.Melompat melewati tali
- D.Menari Bersama

Dalam permainan Megala-gala, tujuan utama dari setiap tim adalah...?

- A.Menuju garis finish dan kembali tanpa tersentuh
- B.Mengumpulkan bola terbanyak
- C.Menari bersama
- D.Melompat melewati tali

Apa tujuan dari pembuatan dan pembakaran ogoh-ogoh dalam rangkaian upacara Nyepi?

- A.Menghibur wisatawan
- B.Mengusir roh jahat dan membersihkan lingkungan dari energi negatif
- C.Merayakan kemenangan dalam perang
- D.Menyambut kedatangan musim semi

Di Bali terdapat tradisi unik di mana jenazah tidak dikubur atau dikremasi, melainkan ditaruh di bawah pohon Taru Menyan. Ini terjadi di desa apa ?

- A.Pelaga
- B.Jatiluwh
- C.Tenganan

D.Trunyan

Tradisi yang dilakukan oleh masyarakat Desa Seraya, Karangasem, berupa pertarungan menggunakan tongkat kayu atau rotan sebagai simbol keberanian dan kekuatan disebut...?

- A.Gebug Ende
- B.Mekare-kare
- C.Siat Sampian
- D.Omed-omedan

Tradisi permainan tradisional dari Desa Panji, Kecamatan Sukasada, yang dilakukan untuk memperingati jasa Ki Gusti Ngurah Panji Sakti. Permainan ini melibatkan dua kelompok peserta yang berbaris dan saling berusaha menangkap ekor lawan, menyerupai burung gagak yang mengejar mangsanya. Tradisi ini dikenal sebagai...?

- A.Megoak-goakan
- B.Gebug Ende
- C.Sampi Gerumbungan
- D.Ngusaba Bukakak

Tradisi lomba sapi yang mirip dengan Makepung di Jembrana, namun fokus utamanya bukan pada kecepatan, melainkan pada penampilan dan keserasian antara sapi dan joki. Tradisi ini biasanya diadakan untuk merayakan hari-hari besar dan sebagai bentuk syukur atas hasil pertanian. Tradisi ini disebut...?

- A.Mekare-kare
- B.Siat Sampian
- C.Omed-omedan
- D.Sampi Gerumbungan

Tradisi yang berasal dari Desa Giri Emas, Kecamatan Sawan, yang dilakukan setiap dua tahun sekali pada bulan purnama sasih kedasa. Tradisi ini merupakan upacara syukur atas kesuburan tanah dan hasil pertanian, dengan mengarak simbol burung garuda yang terbuat dari daun enau muda. Tradisi ini dikenal sebagai...?

- A.Ngusaba Bukakak
- B.Nyakan Diwang
- C.Gebug Ende
- D.Omed-omedan

Tarian tradisional dari Bali yang termasuk dalam kategori Wali (tari suci), ditarikan oleh dua gadis muda dalam keadaan trans untuk mengusir roh jahat. Tarian ini berasal dari Kabupaten Karangasem, namun juga dikenal di daerah lain di Bali. Tarian ini adalah...?

- A.Legong Kraton
- B.Rejang
- C.Sanghyang Dedari
- D.Baris Upacara

Tari Barong biasanya ditampilkan dalam konteks...

- A.Hiburan murni
- B.Cerita rakyat
- C.Pertunjukan ritual melawan kejahatan
- D.Penutup acara pernikahan

Tari Kecak menggambarkan kisah dari...

- A.Mahabharata
- B.Cerita rakyat Bali

C.Legenda Gunung Agung

D.Ramayana

Permainan tradisional gulat lumpur yang berasal dari Bali disebut..

A.Mepantigan

B.Gala-gala

C.Silat

D.Metajog

Permainan “Mepantigan” adalah seni bela diri tradisional Bali yang dilakukan di atas...

A.Karpet

B.Lumpur

C.Batu

D.Rumput

Perang Pandan adalah tradisi dari desa...

A.Sengkiding

B.Karangasem

C.Tenganan

D.Trunyan

Perang Pandan menggunakan senjata dari...

A.Pandan Wangi

B.Pandan Berduri



C.Rotan

D.Kayu

Upacara adat hindu bali yang dilakukan untuk merayakan lepasnya tali pusar bayi adalah

A.Kepus Puser

B.Otonan

C.Melukat

D.Mewinten

Apa tujuan tradisi Tumpek Wayang?

A.Menghormati binatang

B.Menghormati para dalang dan wayang

C.Menyucikan gamelan

D.Menyucikan diri

Hari raya Siwaratri dalam tradisi Bali adalah hari untuk...

A.Menyucikan roh leluhur

B.Melakukan tapa brata atau introspeksi

C.Membakar ogoh-ogoh

D.Mengantar sesajen

Tradisi Mebat biasanya dilakukan saat...

A.Upacara kematian



- B. Menjelang piodalan atau Galungan
- C. Perayaan ulang tahun
- D. Setelah Nyepi

Tradisi Mekotek menggunakan alat berupa...

- A. Kayu Panjang
- B. Janur
- C. Pandan Berduri
- D. Obor

Apa nama tradisi makan bersama secara lesehan yang berasal dari Karangasem, Bali?

- A. Mesangih
- B. Mepandes
- C. Melukat
- D. Megibung

Tradisi Megibung di Bali memiliki tujuan utama untuk...

- A. Menolak bala
- B. Merayakan kemenangan perang
- C. Memperingati kematian leluhur
- D. Mempererat hubungan sosial dan kebersamaan

Tradisi Omed-omedan di Denpasar melibatkan apa?



- A. Lomba membuat ogoh-ogoh
- B. Anak muda saling tarik dan cium di jalan
- C. Perlombaan barong
- D. Tari massal di pura

Tradisi Ngerebeg biasanya melibatkan...

- A. Anak-anak berdandan menyeramkan dan berkeliling desa
- B. Mengarak barong besar
- C. Membuat ogoh-ogoh kecil
- D. Perlombaan menyanyikan kidung

Dalam tradisi Ngerupuk yang dilakukan sehari sebelum Nyepi, masyarakat Bali.

- A. Membuat ogoh-ogoh untuk dibakar di laut
- B. Mengarak ogoh-ogoh besar keliling desa untuk mengusir roh jahat
- C. Makan bersama dengan keluarga besar
- D. Membuang barang-barang yang sudah tidak terpakai

Dalam tradisi Tari Kecak, para penari biasanya...

- A. Menggunakan pakaian adat Bali dengan gerakan lambat
- B. Menggunakan api dan menari berkeliling
- C. Membentuk lingkaran sambil menyanyikan irama dengan suara "cak-cak"
- D. Menari dengan alat musik gamelan

Sebelum pelaksanaan Nyepi, umat Hindu Bali melakukan upacara...

- A. Galungan
- B. Saraswati
- C. Pagerwesi
- D. Melasti

Dalam tradisi Bali, ogoh-ogoh dibuat dan diarak pada malam...

- A. Kuningan
- B. Galungan
- C. Tilem
- D. Pengrupukan

Upacara Manusa Yadnya yang dilakukan saat pernikahan disebut...

- A. Metatah
- B. Pawiwahan
- C. Ngaben
- D. Melaspas

Ngaben termasuk ke dalam jenis upacara...

- A. Dewa Yadnya
- B. Pitra Yadnya
- C. Rsi Yadnya
- D. Manusa Yadnya

Apa nama sesajen harian dalam tradisi Bali?

- A. Banten



- B.Tumpeng
- C.Canang sari
- D.Sembahyang

Upacara kecil yang dilakukan sebelum makan untuk mempersembahkan makanan kepada roh disebut...

- A.Sembahyang
- B.Ngerupuk
- C.Ngejot
- D.Mejaya-jaya

"Mepandes" atau "Metatah" adalah upacara yang menandai...

- A.Kematian
- B.Kelahiran
- C.Kedewasaan
- D.Pernikahan

"Ngurek" adalah tradisi yang melibatkan...

- A.Menyucikan senjata
- B.Menusuk tubuh dengan keris tanpa luka

- C.Membakar ogoh-ogoh
- D.Menari di atas bara api

"Tumpek Pengatag" adalah upacara yang berkaitan dengan...



- A. Tumbuhan dan pohon
- B. Hewan ternak
- C. Senjata
- D. Ilmu pengetahuan

Apa nama alat musik bambu khas Jembrana yang dikenal dengan suara bass yang kuat?

- A. Gong
- B. Jegog
- C. Angklung
- D. Rindik

Tradisi "Barong Brutuk" yang melibatkan tarian dengan kostum dari serat pisang kering dilakukan di:

- A. Desa Trunyan, Bangli
- B. Desa Tenganan, Karangasem
- C. Desa Sudaji, Buleleng
- D. Desa Adat Jimbaran, Badung

Subak merupakan sistem tradisional Bali untuk?

- A. Pendidikan
- B. Upacara
- C. Pengairan sawah
- D. Pengobatan

Apa nama struktur kasta dalam masyarakat Bali?

- A. Tri Hita Karana

- B.Catur Warna
- C.Caturwangsa
- D.Sad Ripu

Banjar dalam struktur masyarakat Bali berfungsi sebagai

- A.Wilayah hukum
- B.Pemerintah adat
- C.Tempat ibadah
- D.Pengawas pura

Upacara potong rambut pertama bayi disebut?

- A.Mepandes
- B.Menek Kelih
- C.Ngotonin
- D.Mapetik

Pakaian adat pria Bali bagian kepala disebut?

- A.Sanggul
- B.Udeng
- C.Tapih
- D.Sabuk

Tumpek Pengatag dikenal juga dengan sebutan?



- A. Tumpek Bubuh
- B. Tumpek Landep
- C. Tumpek Kandang
- D. Tumpek Wayang

Piodalan adalah upacara yang dilakukan saat?

- A. Hari raya Nyepi
- B. Hari jadi pura
- C. Upacara panen
- D. Kelahiran bayi

Tari Pendet awalnya merupakan tarian

- A. Penyambutan dewa di pura
- B. Hiburan rakyat
- C. Perang
- D. Pernikahan

Permainan tradisional Bali yang melibatkan peran kucing dan tikus disebut

- A. Megoak-goakan
- B. Meong-meong
- C. Magala-galaan
- D. Curik-curik

Dalam permainan Meong-meong, peran 'bikul' berarti

- A. Kucing



- B. Tikus
- C. Penjaga
- D. Pemimpin

Permainan tradisional Bali yang mirip dengan Gobak Sodor adalah

- A. Magala-galaan
- B. Sepit-sepitan
- C. Metembing
- D. Curik-curik

Permainan yang melibatkan dua pemain membentuk 'pintu' dengan tangan disebut

- A. Meong-meong
- B. Magala-galaan
- C. Curik-curik
- D. Sepit-sepitan

Permainan tradisional Bali yang menggunakan alat penjepit untuk memindahkan bola atau kelereng disebut

- A. Sepit-sepitan
- B. Masuntik
- C. Metembing
- D. Gebuk Tingkih

Permainan yang menggunakan bambu sebagai alat utama dan melatih keseimbangan adalah



- A. Metajog
- B. Masuntik
- C. Gebuk Tingkih
- D. Meong-meong

Upacara yang dilakukan untuk menyucikan alat musik, topeng, dan pakaian yang digunakan selama upacara disebut?

- A. Tumpek Krulut
- B. Tumpek Landep
- C. Tumpek Kandang
- D. Tumpek Uduh

Dalam kisah Lubdaka yang bermalam di hutan dan tanpa disadari melakukan tindakan yang dianggap sebagai bentuk pemujaan kepada Dewa Siwa. Hari Raya ini dikenal sebagai malam perenungan dosa dan introspeksi diri. Apa nama hari raya tersebut?

- A. Galungan
- B. Kuningan
- C. Pagerwesi
- D. Siwa Ratri

Permainan tradisional Bali yang menggunakan kemiri sebagai alat utama untuk diadu disebut

- A. Gebuk Tingkih
- B. Masuntik
- C. Metembing
- D. Meong-meong



Makepung adalah tradisi balapan apa di Bali?

- A. Balap kuda
- B. Balap babi
- C. Balap kerbau
- D. Balap ayam

Tradisi Nyakan Diwang adalah?

- A. Membakar dupa
- B. Menyalakan obor di pura
- C. Menyebar bunga
- D. Memasak di luar rumah

Tradisi Omed-Omedan di Sesetan dilaksanakan pada?

- A. Galungan
- B. Nyepi
- C. Hari Ngembak Geni
- D. Saraswati

Upacara dalam tradisi Hindu Bali yang dilakukan sebelum memulai pembangunan, baik rumah, bangunan, maupun tempat suci disebut?

- A. Ngeruak Karang
- B. Melaspas
- C. Mesangih
- D. Sudhi Wedani



Appendix 6. Question Manager Code

```
using UnityEngine;
using UnityEngine.SceneManagement;
using UnityEngine.Networking;
using TMPro;
using System.Collections;
using System.Collections.Generic;
using System.IO;

public class QuestionManager : MonoBehaviour
{
    public TextMeshProUGUI questionText;
    public List<AnswerButton> answerButtons;
    public TimerController timerController;

    private List<QuestionData> questions;
    private int currentQuestionIndex = 0;
    private int correctAnswers = 0;
    private int wrongAnswers = 0;

    void Start()
    {
        LoadQuestionsFromJson();
    }

    void LoadQuestionsFromJson()
    {

```

```
string sceneName = SceneManager.GetActiveScene().name;
```

```
if (ThemeManager.Instance != null &&  
ThemeManager.Instance.currentTheme != null)
```

```
{  
    sceneName = ThemeManager.Instance.currentTheme.regionName;  
}
```

```
string jsonFileName = sceneName + ".json";
```

```
StartCoroutine(LoadQuestionFromStreamingAssets(jsonFileName));
```

```
}
```

```
IEnumerator LoadQuestionFromStreamingAssets(string fileName)
```

```
{
```

```
    string path = Path.Combine(Application.streamingAssetsPath, fileName);
```

```
    Debug.Log("Trying to load question file from: " + path);
```

```
    UnityWebRequest www = UnityWebRequest.Get(path);
```

```
    yield return www.SendWebRequest();
```

```
    if (www.result == UnityWebRequest.Result.Success)
```

```
    {
```

```
        string json = www.downloadHandler.text;
```

```
        QuestionList loadedList = JsonUtility.FromJson<QuestionList>(json);
```

```
        if (loadedList != null && loadedList.questions != null)
```

```
        {
```

```
            questions = loadedList.questions;
```

```
            Debug.Log($"Loaded {questions.Count} questions from {fileName}");
```

```

ShuffleQuestions();

if (QuestionCounter.Instance != null)
{
    QuestionCounter.Instance.SetTotal(questions.Count);
}

DisplayQuestion();

if (timerController != null)
{
    timerController.OnTimeUp += OnTimeUp;
}
else
{
    Debug.LogError($"Failed to parse questions from: {fileName}");
}
else
{
    Debug.LogError($"Gagal memuat file soal dari: {path}\nError:
{www.error}");
}

void DisplayQuestion()
{

```



```

if (currentQuestionIndex >= questions.Count)
{
    GoToFinalScore();
    return;
}

```

```

QuestionData currentQuestion = questions[currentQuestionIndex];
questionText.text = currentQuestion.question;

```

```

TTSCClient.Instance.Speak(currentQuestion.question);

```

```

for (int i = 0; i < answerButtons.Count; i++)
{
    if (i < currentQuestion.choices.Count)
    {
        answerButtons[i].SetAnswer(currentQuestion.choices[i]);
        answerButtons[i].gameObject.SetActive(true);
    }
    else
    {
        answerButtons[i].gameObject.SetActive(false);
    }
}
}

```

```

public void SubmitAnswer(string selectedAnswer)
{
    StartCoroutine(HandleAnswer(selectedAnswer));
}

```

```

    }

    private IEnumerator HandleAnswer(string selectedAnswer)
    {
        if (timerController != null)
            timerController.PauseTimer();

        bool correct = false;
        if (currentQuestionIndex < questions.Count)
        {
            correct = selectedAnswer ==
questions[currentQuestionIndex].correctAnswer;
        }

        if (correct)
        {
            correctAnswers++;
            ResultPanelController.Instance.ShowCorrect();
        }
        else
        {
            wrongAnswers++;
            ResultPanelController.Instance.ShowIncorrect();
        }

        yield return new WaitForSeconds(3f);

        currentQuestionIndex++;
    }

```

```
if (QuestionCounter.Instance != null)
{
    QuestionCounter.Instance.Decrease();
}

if (currentQuestionIndex >= questions.Count)
{
    if (timerController != null)
        timerController.StopTimer();

    GoToFinalScore();
}
else
{
    DisplayQuestion();

    if (timerController != null)
        timerController.ResumeTimer();
}
}

void OnTimeUp()
{
    GoToFinalScore();
}

void GoToFinalScore()
{
```



```
        string regionName =  
ThemeManager.Instance?.currentTheme?.regionName ?? "Unknown";  
  
        ScoreManager.Instance.SaveScore(regionName, correctAnswers,  
wrongAnswers);  
  
        ThemeManager.Instance?.RestoreLastTheme();  
  
        SceneManager.LoadScene("FinalScore");  
    }  
}
```

```
private void ShuffleQuestions()  
{  
    for (int i = 0; i < questions.Count; i++)  
    {  
        QuestionData temp = questions[i];  
        int randomIndex = Random.Range(i, questions.Count);  
        questions[i] = questions[randomIndex];  
        questions[randomIndex] = temp;  
    }  
}  
}
```



Appendix 7. TTS Client Code

```

using UnityEngine;
using UnityEngine.Networking;
using System.Collections;

public class TTSClient : MonoBehaviour
{
    public static TTSClient Instance;

    [Header("TTS Settings")]
    public string fixedApiUrl = "https://tts-proxy-mu.vercel.app";
    public bool voiceEnabled = true;

    private AudioSource audioSource;

    void Awake()
    {
        if (Instance == null)
        {
            Instance = this;
            DontDestroyOnLoad(gameObject);
            audioSource = gameObject.AddComponent<AudioSource>();
            audioSource.playOnAwake = false;

            Debug.Log($"[TTSClient] Initialized with fixed URL: {fixedApiUrl}");
        }
        else
    
```

```

    {
        Destroy(gameObject);
    }
}

public void ToggleVoice()
{
    voiceEnabled = !voiceEnabled;
    Debug.Log($"[TTSCClient] Voice Enabled: {voiceEnabled}");
}

public void Speak(string text)
{
    if (!voiceEnabled || string.IsNullOrEmpty(text))
    {
        Debug.LogWarning("[TTSCClient] Voice is disabled or text is empty.");
        return;
    }

    StartCoroutine(SendTextToSpeech(text));
}

private IEnumerator SendTextToSpeech(string text)
{
    string url = $"{fixedApiUrl}/synthesize";

    TTSRequest payload = new TTSRequest { text = text, speaker_id =
speakerId };

    string jsonData = JsonUtility.ToJson(payload);
    byte[] jsonBytes = System.Text.Encoding.UTF8.GetBytes(jsonData);

```

```

using (UnityWebRequest req = new UnityWebRequest(url, "POST"))
{
    req.uploadHandler = new UploadHandlerRaw(jsonBytes);
    req.downloadHandler = new DownloadHandlerBuffer();
    req.SetRequestHeader("Content-Type", "application/json");
    req.SetRequestHeader("Accept", "audio/wav");

    yield return req.SendWebRequest();

    if (req.result != UnityWebRequest.Result.Success)
    {
        Debug.LogError($"[TTSCClient] TTS Error: {req.error}");
    }
    else
    {
        byte[] audioData = req.downloadHandler.data;
        if (audioData != null && audioData.Length > 0)
        {
            PlayWavFromBytes(audioData);
        }
    }
}

private void PlayWavFromBytes(byte[] data)
{
    AudioClip clip = WavUtility.ToAudioClip(data, 0, "tts");

```

```
if (clip != null)
{
    audioSource.Stop();
    audioSource.clip = clip;
    audioSource.Play();
}
}
```

```
[System.Serializable]
public class TTSTRequest
{
    public string text;
    public string speaker_id;
}
}
```



Appendix 8. Score Manager Code

```

using UnityEngine;
using System.Collections.Generic;
using System.IO;

public class ScoreManager : MonoBehaviour
{
    public static ScoreManager Instance;

    public int latestCorrect { get; private set; }
    public int latestIncorrect { get; private set; }

    private ScoreData scoreData = new ScoreData();
    private string savePath;

    void Awake()
    {
        if (Instance == null)
        {
            Instance = this;
            DontDestroyOnLoad(gameObject);
            savePath = Path.Combine(Application.persistentDataPath, "scores.json");
            LoadScore();
        }
        else
        {
            Destroy(gameObject);
        }
    }
}

```

```

    }
}

```

```

public void SaveScore(string regionName, int correct, int incorrect)
{
    latestCorrect = correct;
    latestIncorrect = incorrect;

    RegionScore existing = scoreData.scores.Find(r => r.regionName ==
regionName);
    if (existing != null)
    {
        if (correct > existing.correct)
        {
            existing.correct = correct;
            existing.incorrect = incorrect;
        }
    }
    else
    {
        scoreData.scores.Add(new RegionScore
        {
            regionName = regionName,
            correct = correct,
            incorrect = incorrect
        });
    }

    string json = JsonUtility.ToJson(scoreData, true);
}

```

```

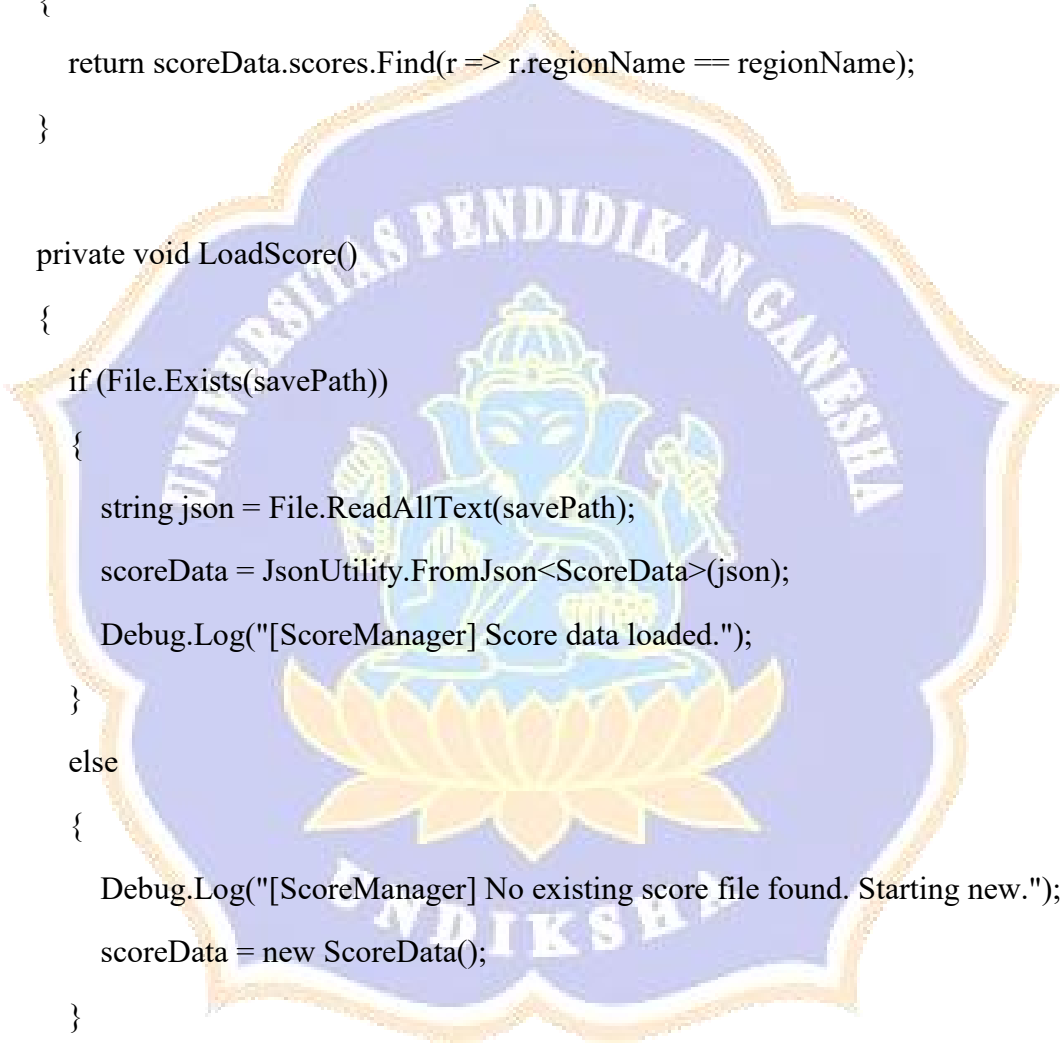
File.WriteAllText(savePath, json);

Debug.Log($"[ScoreManager] Score saved for {regionName}: {correct}
correct, {incorrect} incorrect.");
}

public RegionScore GetRegionScore(string regionName)
{
    return scoreData.scores.Find(r => r.regionName == regionName);
}

private void LoadScore()
{
    if (File.Exists(savePath))
    {
        string json = File.ReadAllText(savePath);
        scoreData = JsonUtility.FromJson<ScoreData>(json);
        Debug.Log("[ScoreManager] Score data loaded.");
    }
    else
    {
        Debug.Log("[ScoreManager] No existing score file found. Starting new.");
        scoreData = new ScoreData();
    }
}
}
}

```



Appendix 9. Graph to Fonem Code

```
import json
import os
import re

import numpy as np
import onnxruntime

from nltk.tokenize import TweetTokenizer
from sacremoses import MosesDetokenizer

from .syllable_splitter import SyllableSplitter

ABJAD_MAPPING = {
    "a": "a",
    "b": "bé",
    "c": "cé",
    "d": "dé",
    "e": "é",
    "f": "èf",
    "g": "gé",
    "h": "ha",
    "i": "i",
    "j": "jé",
    "k": "ka",
    "l": "èl",
    "m": "èm",
    "n": "èn",
```



"o": "o",
 "p": "pé",
 "q": "ki",
 "r": "èr",
 "s": "ès",
 "t": "té",
 "u": "u",
 "v": "vé",
 "w": "wé",
 "x": "èks",
 "y": "yé",
 "z": "zèt",
 }

PHONETIC_MAPPING = {

"sy": "ʃ",
 "ny": "ɲ",
 "ng": "ŋ",
 "dj": "dʒ",
 "": "ʔ",
 "c": "tʃ",
 "é": "e",
 "è": "ɛ",
 "ê": "ə",
 "g": "g",
 "I": "ɪ",
 "j": "dʒ",
 "ô": "o",



```

"q": "k",
"U": "o",
"v": "f",
"x": "ks",
"y": "j",
}

```

```

dirname = os.path.dirname(__file__)

```

```

class Predictor:

```

```

    def __init__(self, model_path):

```

```

        # fmt: off

```

```

        self.vocab = ["[UNK]", 'a', 'n', 'è', 'e', 'i', 'r', 'k', 's', 't', 'g', 'm', 'u', 'l', 'p', 'o', 'd',
'b', 'h', 'c', 'j', 'y', 'f', 'w', 'v', 'z', 'x', 'q', '[mask]']

```

```

        self.mask_token_id = self.vocab.index("[mask]")

```

```

        # fmt: on

```

```

        self.session = onnxruntime.InferenceSession(model_path)

```

```

    def predict(self, word: str) -> str:

```

```

        """

```

```

        Predict the phonetic representation of a word.

```

```

        Args:

```

```

            word (str): The word to predict.

```

```

        Returns:

```

```

            str: The predicted phonetic representation of the word.

```

```

        """

```

```

text = [self.vocab.index(c) if c != "e" else self.mask_token_id for c in word]
text.extend([0] * (32 - len(text))) # Pad to 32 tokens
inputs = np.array([text], dtype=np.int64)
(predictions,) = self.session.run(None, {"input_4": inputs})

```

```

# find masked idx token

```

```

_, masked_index = np.where(inputs == self.mask_token_id)

```

```

# get prediction at those masked index only

```

```

mask_prediction = predictions[0][masked_index]

```

```

predicted_ids = np.argmax(mask_prediction, axis=1)

```

```

# replace mask with predicted token

```

```

for i, idx in enumerate(masked_index):

```

```

    text[idx] = predicted_ids[i]

```

```

return "".join([self.vocab[i] for i in text if i != 0])

```

```

class G2P:

```

```

    def __init__(self):

```

```

        self.tokenizer = TweetTokenizer()

```

```

        self.detokenizer = MosesDetokenizer(lang="id")

```

```

        dict_path = os.path.join(dirname, "data/dict.json")

```

```

        with open(dict_path) as f:

```

```

            self.dict = json.load(f)

```

```
model_path = os.path.join(dirname, "model/pron.onnx")
```

```
self.predictor = Predictor(model_path)
```

```
self.syllable_splitter = SyllableSplitter()
```

```
def __call__(self, text: str) -> str:
```

```
    """
```

```
    Convert text to phonetic representation.
```

```
    Args:
```

```
        text (str): The text to convert.
```

```
    Returns:
```

```
        str: The phonetic representation of the text.
```

```
    """
```

```
    text = text.lower()
```

```
    text = re.sub(r"^[^a-z0-9\.,?!-]", "", text)
```

```
    text = text.replace("-", " ")
```

```
    prons = []
```

```
    words = self.tokenizer.tokenize(text)
```

```
    for word in words:
```

```
        # PUEBI pronunciation
```

```
        if word in self.dict:
```

```
            pron = self.dict[word]
```

```
        elif len(word) == 1 and word in ABJAD_MAPPING:
```

```
            pron = ABJAD_MAPPING[word]
```

```
        elif "e" not in word or not word.isalpha():
```

```

    pron = word
elif "e" in word:
    pron = self.predictor.predict(word)

# Replace alofon /e/ with e (temporary)
pron = pron.replace("é", "e")
pron = pron.replace("è", "e")

# Replace /x/ with /s/
if pron.startswith("x"):
    pron = "s" + pron[1:]

sylls = self.syllable_splitter.split_syllables(pron)
# Decide where to put the stress
stress_loc = len(sylls) - 1
if len(sylls) > 1 and "è" in sylls[-2]:
    if "è" in sylls[-1]:
        stress_loc = len(sylls) - 2
    else:
        stress_loc = len(sylls)

# Apply rules on syllable basis
# All alophone are set to tense by default
# and will be changed to lax if needed
alophone = {"e": "é", "o": "o"}
alophone_map = {"i": "I", "u": "U", "e": "è", "o": "ô"}
for i, syll in enumerate(sylls, start=1):
    # Put Syllable stress

```

```

if i == stress_loc:
    syll = "" + syll

# Allophone syllable rules
for v in ["e", "o"]:
    # Replace with lax allphone [ɛ, ɔ] if
    # in closed final syllables
    if v in syll and not syll.endswith(v) and i == len(sylls):
        allophone[v] = allophone_map[v]

# Allophone syllable stress rules
for v in ["i", "u"]:
    # Replace with lax allphone [ɪ, ʊ] if
    # in the middle of syllable without stress
    # and not ends with coda nasal [m, n, ng] (except for final syllable)
    if (
        v in syll
        and not syll.startswith("")
        and not syll.endswith(v)
        and (
            not any(syll.endswith(x) for x in ["m", "n", "ng"])
            or i == len(sylls)
        )
    ):
        syll = syll.replace(v, allophone_map[v])

if syll.endswith("nk"):
    syll = syll[:-2] + "ng"

```

```

elif syll.endswith("d"):
    syll = syll[:-1] + "t"
elif syll.endswith("b"):
    syll = syll[:-1] + "p"
elif syll.endswith("k") or (
    syll.endswith("g") and not syll.endswith("ng")
):
    syll = syll[:-1] + ""
sylls[i - 1] = syll

pron = "".join(sylls)
# Apply phonetic and allophone mapping
for v in allophone:
    if v == "o" and pron.count("o") == 1:
        continue
    pron = pron.replace(v, allophone[v])
for g, p in PHONETIC_MAPPING.items():
    pron = pron.replace(g, p)
pron = pron.replace("kh", "x")

prons.append(pron)
prons.append(" ")

return self.detokenizer.detokenize(prons)

```

Appendix 10. Fine-tuning Tacotron 2

```
# Install dependensi utama
```

```
!apt-get install -y espeak-ng
```

```
!pip install -q Unidecode matplotlib numpy==1.24.4 pandas scipy==1.10.1  
sklearn torch==2.0.1 torchaudio==2.0.2 librosa gdown soundfile
```

```
!git clone https://github.com/NVIDIA/tacotron2.git
```

```
!pip install -q -v --disable-pip-version-check --no-cache-dir ./
```

```
%cd ..
```

```
# Download & ekstrak dataset (contoh: sudah diupload sebelumnya ke  
GDrive/public)
```

```
!gdown --id 1z17z4Teufp8D0_BrQn37t2xmMdXezxoG -O cv-id.tar.gz
```

```
!mkdir -p /content/data && tar -xvzf cv-id.tar.gz -C /content/data
```

```
!pip install pydub
```

```
!apt-get install ffmpeg -y
```

```
import os
```

```
import pandas as pd
```

```
from sklearn.model_selection import train_test_split
```

```
from pydub import AudioSegment
```

```
from glob import glob
```

```
from tqdm import tqdm
```

```

# Path dasar

data_dir = "/content/data/cv-corpus-21.0-2025-03-14/id"
clips_dir = os.path.join(data_dir, "clips")
clips_wav_dir = os.path.join(data_dir, "clips_wav")
filelist_dir = "/content/tacotron2/filelists"
os.makedirs(clips_wav_dir, exist_ok=True)
os.makedirs(filelist_dir, exist_ok=True)

# Baca data
df = pd.read_csv(os.path.join(data_dir, "validated.tsv"), sep="\t")
df = df[df["sentence"].notnull() & df["path"].notnull()]
df["text"] = df["sentence"].apply(lambda x: x.replace("|", "").strip())

# Konversi MP3 ke WAV 22050Hz
print(f'Mengonversi file MP3 ke WAV (22050Hz)...')
for mp3_path in tqdm(df["path"]):
    input_mp3 = os.path.join(clips_dir, mp3_path)
    output_wav = os.path.join(clips_wav_dir, mp3_path.replace(".mp3", ".wav"))
    if not os.path.exists(output_wav):
        sound = AudioSegment.from_mp3(input_mp3)
        sound = sound.set_frame_rate(22050)
        sound.export(output_wav, format="wav")

# Tambahkan path full WAV
df["full_path"] = df["path"].apply(lambda x: os.path.join(clips_wav_dir,
x.replace(".mp3", ".wav")))

# Split train/val/test

```

```
train, temp = train_test_split(df, test_size=0.1, random_state=42)
val, test = train_test_split(temp, test_size=0.5, random_state=42)
```

```
# Fungsi filelist writer
```

```
def write_filelist(df_split, filename):
```

```
    with open(os.path.join(filelist_dir, filename), "w") as f:
```

```
        for _, row in df_split.iterrows():
```

```
            f.write(f'{row["full_path"]} | {row["text"]} | {row["text"]}\n')
```

```
write_filelist(train, "train_filelist.txt")
```

```
write_filelist(val, "val_filelist.txt")
```

```
write_filelist(test, "test_filelist.txt")
```

```
print("Konversi & preprocessing selesai. Filelist siap!")
```

```
%cd tacotron2
```

```
# Patch config
```

```
with open("hparams.py", "a") as f:
```

```
    f.write('\n\ntraining_files = "filelists/train_filelist.txt"\n')
```

```
    f.write('validation_files = "filelists/val_filelist.txt"\n')
```

```
!pip install -q unidecode
```

```
# Backup dulu hparams.py
```

```
!cp /content/tacotron2/hparams.py /content/tacotron2/hparams_backup.py
```

```
# Tambahkan class HParams manual dan ganti penggunaan
tf.contrib.training.HParams
```

```
hparams_patch = """
```

```
class HParams(dict):
```

```
    def __init__(self, **kwargs):
```

```
        super().__init__(**kwargs)
```

```
        self.__dict__ = self
```

```
def create_hparams(hparams_string=None, verbose=False):
```

```
    hparams = HParams(
```

```
        #####
```

```
        # Experiment Parameters      #
```

```
        #####
```

```
        epochs=1000,
```

```
        iters_per_checkpoint=1000,
```

```
        seed=1234,
```

```
        dynamic_loss_scaling=True,
```

```
        fp16_run=False,
```

```
        distributed_run=False,
```

```
        dist_backend="nccl",
```

```
        dist_url="tcp://localhost:54321",
```

```
        cudnn_enabled=True,
```

```
        cudnn_benchmark=False,
```

```
        ignore_layers=["embedding.weight"],
```

```
        #####
```

```
        # Data Parameters      #
```

```
#####
```

```
load_mel_from_disk=False,
training_files='filelists/train_filelist.txt',
validation_files='filelists/val_filelist.txt',
text_cleaners=['basic_cleaners'],
```

```
#####
```

```
# Audio Parameters #
```

```
#####
```

```
max_wav_value=32768.0,
sampling_rate=22050,
filter_length=1024,
hop_length=256,
win_length=1024,
n_mel_channels=80,
mel_fmin=0.0,
mel_fmax=8000.0,
```

```
#####
```

```
# Model Parameters #
```

```
#####
```

```
n_symbols=148,
symbols_embedding_dim=512,
```

```
n_frames_per_step=1,
```

```
encoder_kernel_size=5,
```

```
encoder_n_convolutions=3,
```

encoder_embedding_dim=512,

decoder_rnn_dim=1024,

prenet_dim=256,

max_decoder_steps=1000,

gate_threshold=0.5,

p_attention_dropout=0.1,

p_decoder_dropout=0.1,

attention_rnn_dim=1024,

attention_dim=128,

attention_location_n_filters=32,

attention_location_kernel_size=31,

postnet_embedding_dim=512,

postnet_kernel_size=5,

postnet_n_convolutions=5,

#####

Optimization Hyperparameters

#####

use_saved_learning_rate=False,

learning_rate=1e-3,

weight_decay=1e-6,

grad_clip_thresh=1.0,

batch_size=32,

mask_padding=True

```

)
return hparams
"""

with open("/content/tacotron2/hparams.py", "w") as f:
    f.write(hparams_patch)

print("Berhasil mengganti HParams tanpa tensorflow.contrib")

# Perbaiki fungsi pad_center di stft.py
stft_path = "/content/tacotron2/stft.py"

with open(stft_path, "r") as file:
    lines = file.readlines()

with open(stft_path, "w") as file:
    for line in lines:
        if line.strip().startswith("def pad_center"):
            file.write("""def pad_center(data, size, axis=-1):
import numpy as np
n = data.shape[axis]
if size <= n:
    return data

pad_before = (size - n) // 2
pad_after = size - n - pad_before
pad_widths = [(0, 0)] * data.ndim
pad_widths[axis] = (pad_before, pad_after)

return np.pad(data, pad_widths, mode='constant')\n""")

```

```

else:

    file.write(line)

print("Fungsi pad_center berhasil diperbaiki.")

!pip install --upgrade librosa

# Auto-patch untuk mengganti penggunaan pad_center dari librosa
stft_path = "/content/tacotron2/stft.py"

# Baca isi file
with open(stft_path, "r") as f:
    content = f.read()

# Hapus import pad_center dari librosa
content = content.replace("from librosa.util import pad_center, tiny", "from
librosa.util import tiny")

# Tambahkan fungsi pad_center custom (di awal file setelah import)
custom_pad_func = """
def pad_center(data, size):
    n = len(data)
    lpad = (size - n) // 2
    rpad = size - n - lpad
    return np.pad(data, (lpad, rpad), mode='constant')
"""

# Sisipkan fungsi pad_center setelah bagian import terakhir
import_end_index = content.find("from librosa.util import tiny") + len("from
librosa.util import tiny")

```

```
patched_content = content[:import_end_index] + "\n\n" + custom_pad_func +
"\n" + content[import_end_index:]
```

```
# Simpan kembali file yang sudah dimodifikasi
```

```
with open(stft_path, "w") as f:
```

```
    f.write(patched_content)
```

```
print("File stft.py berhasil dipatch. pad_center diganti dengan versi custom.")
```

```
import re
```

```
# Path ke file layers.py
```

```
layers_path = "/content/tacotron2/layers.py"
```

```
# Definisi fungsi librosa_mel_fn yang benar
```

```
mel_patch = """
```

```
def librosa_mel_fn(sr, n_fft, n_mels, fmin, fmax):
```

```
    import librosa
```

```
    return librosa.filters.mel(sr=sr, n_fft=n_fft, n_mels=n_mels, fmin=fmin,
fmax=fmax)
```

```
"""
```

```
with open(layers_path, "r") as f:
```

```
    content = f.read()
```

```
# Hapus semua definisi fungsi mel() atau librosa_mel_fn() yang salah
```

```
content = re.sub(r"def (mel|librosa_mel_fn)\(.*?\):[\s\S]*?(n{2,}|Z)", "", content)
```

```

# Pastikan tidak ada import salah

content = re.sub(r"from librosa\.filters import mel as librosa_mel_fn\n?", "",
content)

# Tambahkan fungsi yang benar ke paling atas file
if "def librosa_mel_fn" not in content:
    content = mel_patch + "\n\n" + content

# Tulis kembali ke file
with open(layers_path, "w") as f:
    f.write(content)

print("Berhasil memperbaiki layers.py dengan fungsi librosa_mel_fn yang benar.")

import io
import numpy as np

file_path = "/content/tacotron2/plotting_utils.py"

new_func = """
import io
import numpy as np
from PIL import Image

def save_figure_to_numpy(fig):
    buf = io.BytesIO()
    fig.savefig(buf, format='png')
    buf.seek(0)
    image = Image.open(buf).convert("RGB")

```

```

    return np.array(image)

"""

# Timpa fungsi lama
with open(file_path, "r") as f:
    lines = f.readlines()

new_lines = []
inside = False
for line in lines:
    if line.strip().startswith("def save_figure_to_numpy"):
        inside = True
        new_lines.append(new_func)
    elif inside:
        if line.strip() == "" or line.startswith("def "):
            inside = False
            new_lines.append(line)
    else:
        new_lines.append(line)

# Simpan ulang
with open(file_path, "w") as f:
    f.writelines(new_lines)

print("Fungsi save_figure_to_numpy berhasil diperbarui dengan metode buffer!")
from google.colab import drive
drive.mount('/content/drive')
from train import train

```



```

from hparams import create_hparams

import os

# Mount drive sudah dilakukan sebelumnya

drive_path = "/content/drive/MyDrive/tacotron2_training"

os.makedirs(drive_path, exist_ok=True)

# Set direktori simpan model dan log ke Google Drive

output_directory = os.path.join(drive_path, "checkpoints")
log_directory = os.path.join(drive_path, "logs")
os.makedirs(output_directory, exist_ok=True)
os.makedirs(log_directory, exist_ok=True)

# Parameter lainnya

checkpoint_path = None # Atau isi ke path checkpoint di Google Drive kalau
melanjutkan

warm_start = False

n_gpus = 1

rank = 0

group_name = "group_name"

hparams = create_hparams()

# Training config

hparams.training_files = "filelists/train_filelist.txt"

hparams.validation_files = "filelists/val_filelist.txt"

hparams.batch_size = 16

hparams.epochs = 50

# Mulai training

```

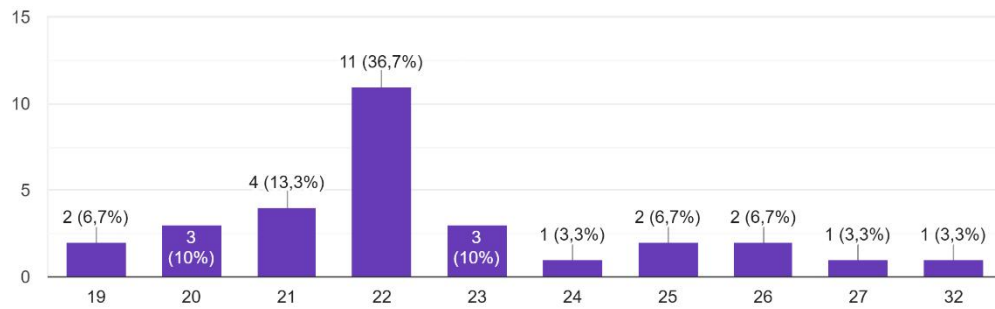
```
train(output_directory, log_directory, checkpoint_path,  
      warm_start, n_gpus, rank, group_name, hparams)
```



Appendix 11. Mean Opinion Score Results

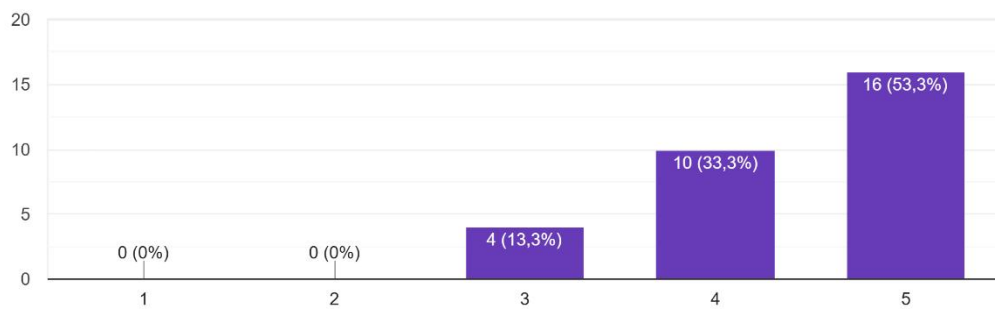
Age Umur

30 jawaban



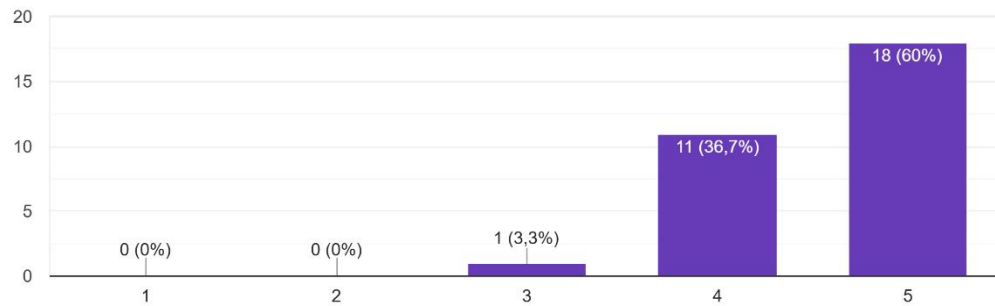
How natural does the resulting voice sound like a human? Seberapa alami suara yang dihasilkan terdengar seperti suara manusia?

30 jawaban



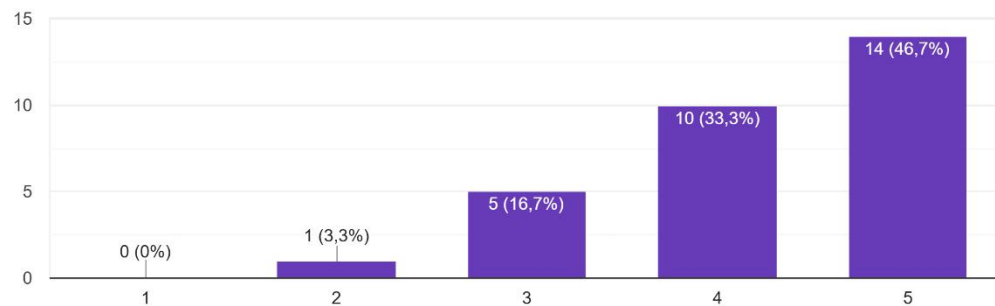
How clear is the pronunciation of the words in the audio? Seberapa jelas pengucapan kata-kata dalam audio?

30 jawaban



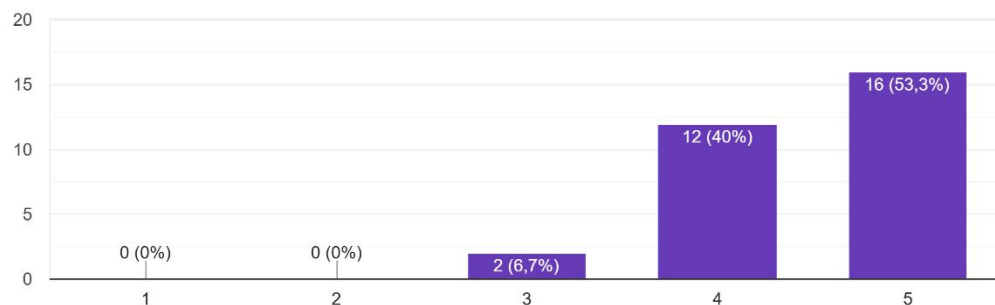
How natural is the intonation (rise and fall of pitch) in the sentence? Seberapa natural intonasi (naik turunnya nada) dalam kalimat tersebut?

30 jawaban



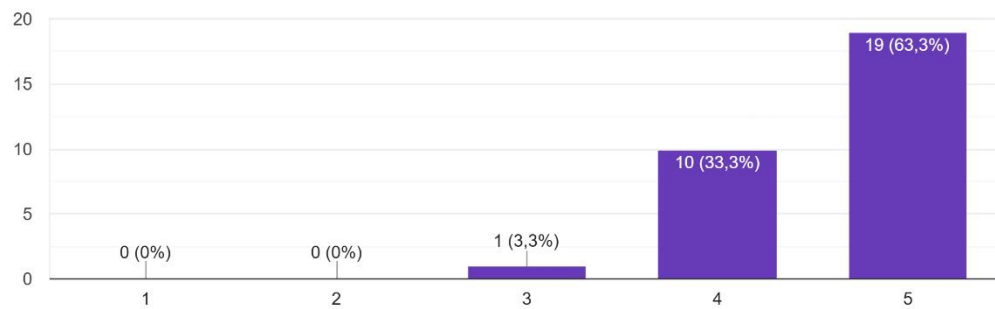
How comfortable is the sound to hear (without disturbing noise)? Seberapa nyamankah suara tersebut untuk didengar (tanpa suara bising yang mengganggu)?

30 jawaban



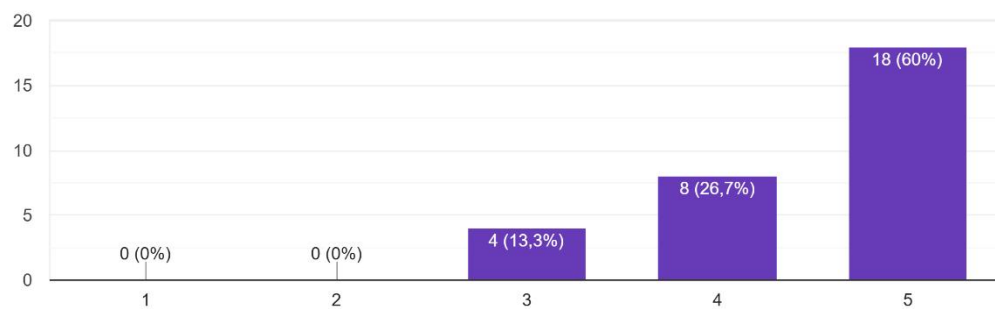
Overall, how is the sound quality? Secara keseluruhan, bagaimana kualitas suaranya?

30 jawaban



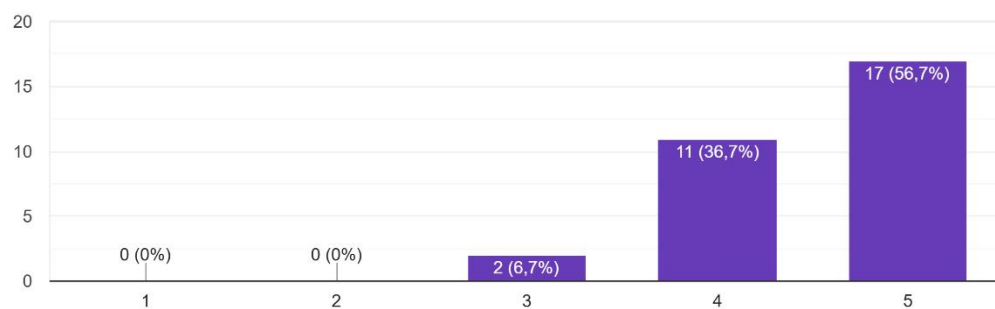
How natural does the resulting voice sound like a human? Seberapa alami suara yang dihasilkan terdengar seperti suara manusia?

30 jawaban



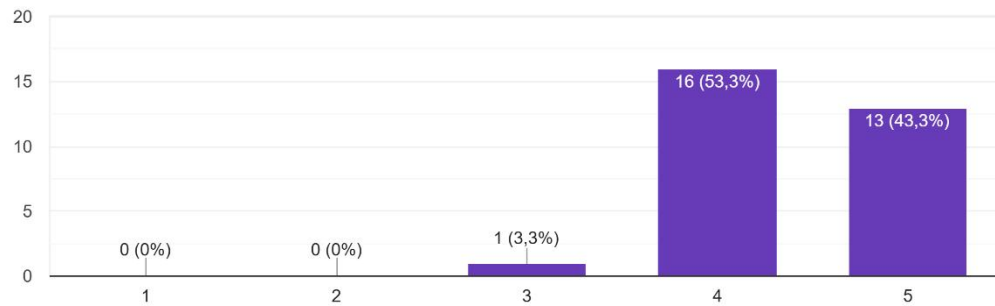
How clear is the pronunciation of the words in the audio? Seberapa jelas pengucapan kata-kata dalam audio?

30 jawaban



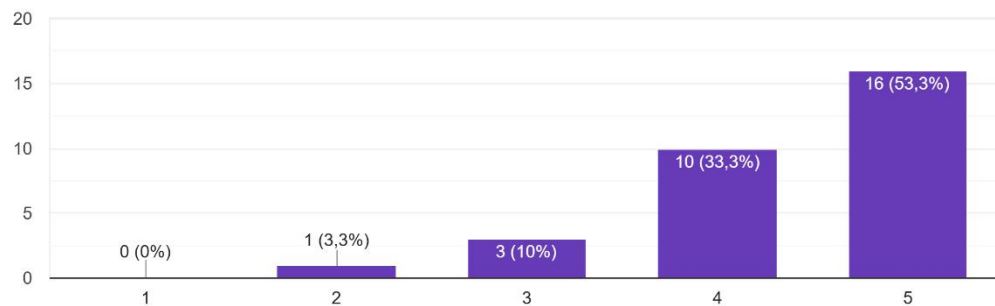
How natural is the intonation (rise and fall of pitch) in the sentence? Seberapa natural intonasi (naik turunnya nada) dalam kalimat tersebut?

30 jawaban



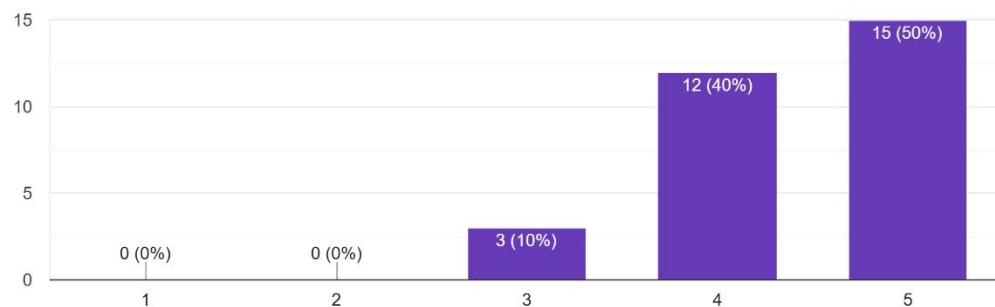
How comfortable is the sound to hear (without disturbing noise)? Seberapa nyamankah suara tersebut untuk didengar (tanpa suara bising yang mengganggu)?

30 jawaban



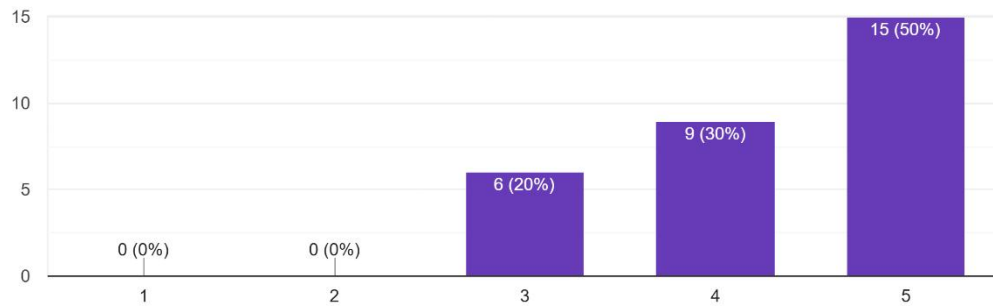
Overall, how is the sound quality? Secara keseluruhan, bagaimana kualitas suaranya?

30 jawaban



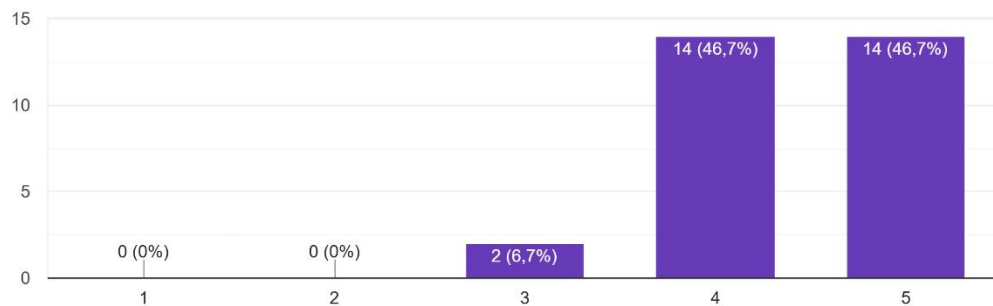
How natural does the resulting voice sound like a human? Seberapa alami suara yang dihasilkan terdengar seperti suara manusia?

30 jawaban



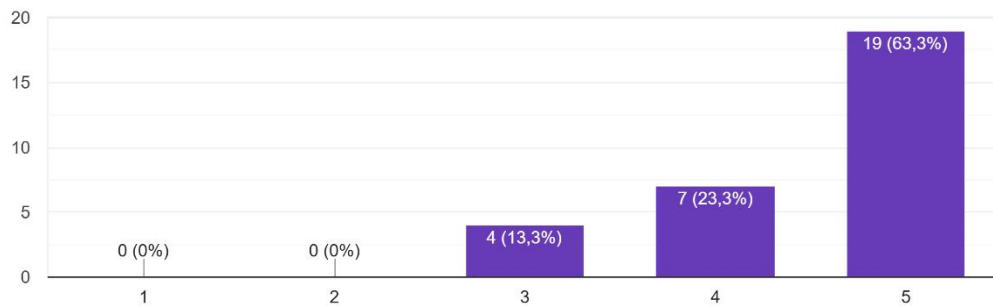
How clear is the pronunciation of the words in the audio? Seberapa jelas pengucapan kata-kata dalam audio?

30 jawaban



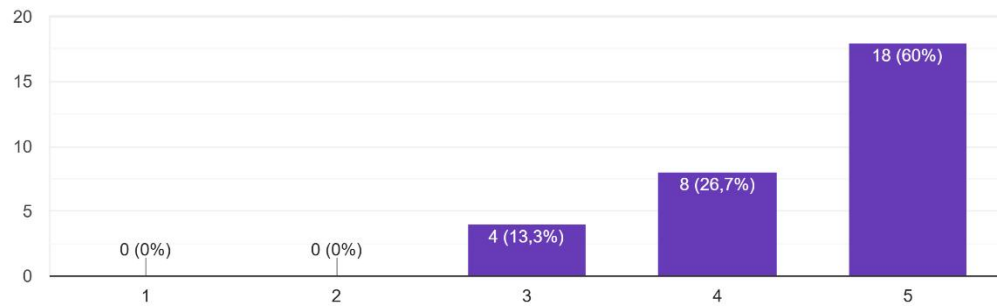
How natural is the intonation (rise and fall of pitch) in the sentence? Seberapa natural intonasi (naik turunnya nada) dalam kalimat tersebut?

30 jawaban



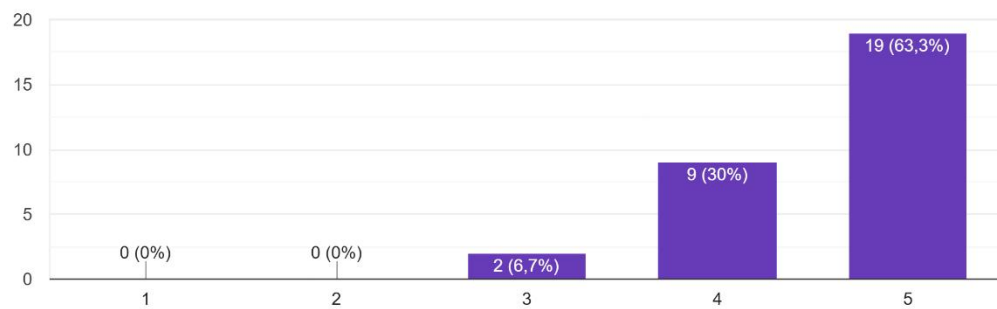
How comfortable is the sound to hear (without disturbing noise)? Seberapa nyamankah suara tersebut untuk didengar (tanpa suara bising yang mengganggu)?

30 jawaban



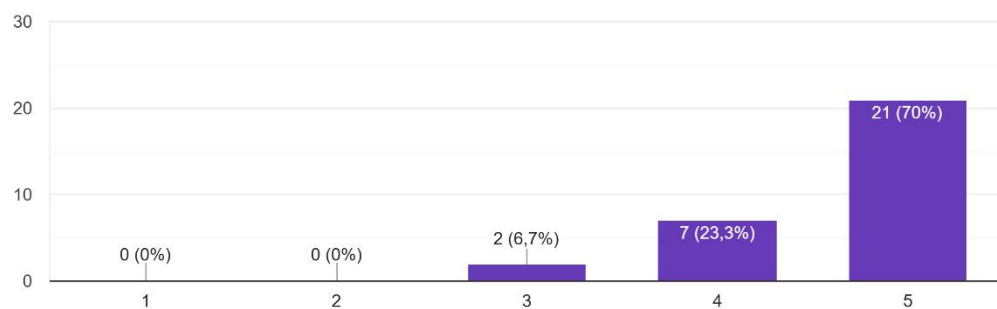
Overall, how is the sound quality? Secara keseluruhan, bagaimana kualitas suaranya?

30 jawaban



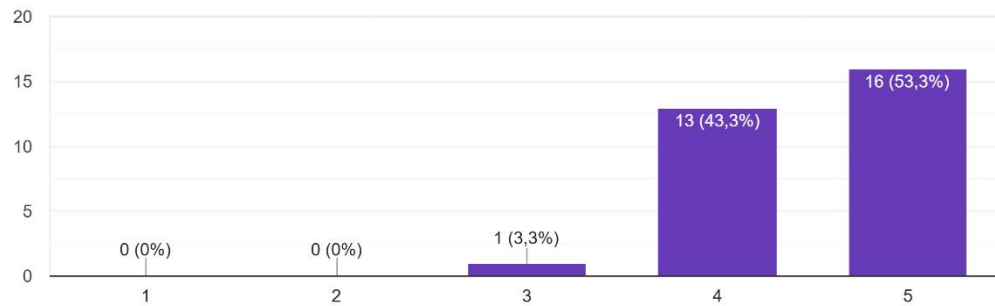
How natural does the resulting voice sound like a human? Seberapa alami suara yang dihasilkan terdengar seperti suara manusia?

30 jawaban



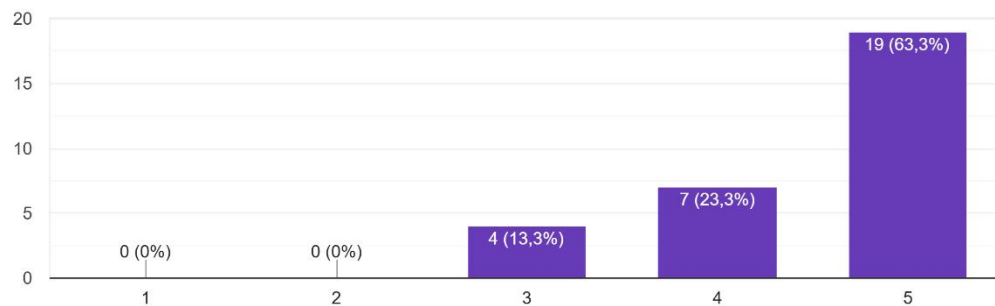
How clear is the pronunciation of the words in the audio? Seberapa jelas pengucapan kata-kata dalam audio?

30 jawaban



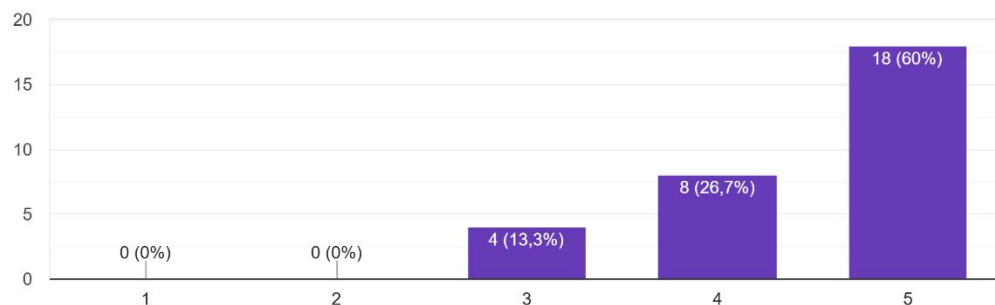
How natural is the intonation (rise and fall of pitch) in the sentence? Seberapa natural intonasi (naik turunnya nada) dalam kalimat tersebut?

30 jawaban



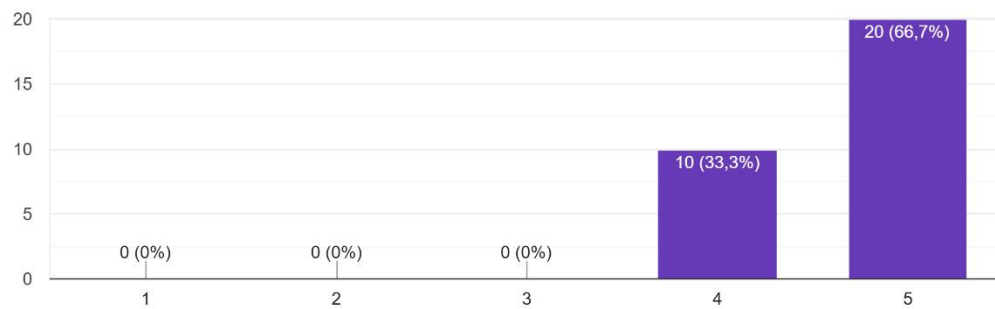
How comfortable is the sound to hear (without disturbing noise)? Seberapa nyamankah suara tersebut untuk didengar (tanpa suara bising yang mengganggu)?

30 jawaban



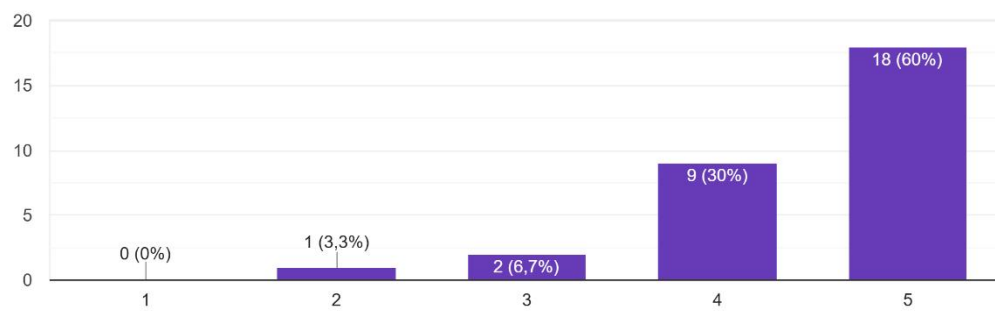
Overall, how is the sound quality? Secara keseluruhan, bagaimana kualitas suaranya?

30 jawaban



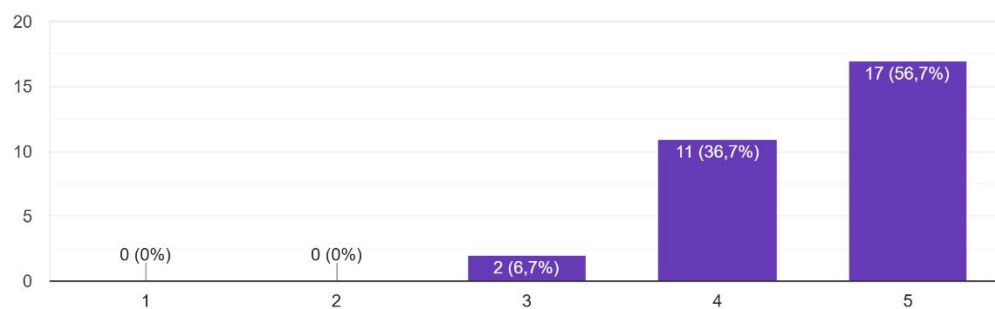
How natural does the resulting voice sound like a human? Seberapa alami suara yang dihasilkan terdengar seperti suara manusia?

30 jawaban



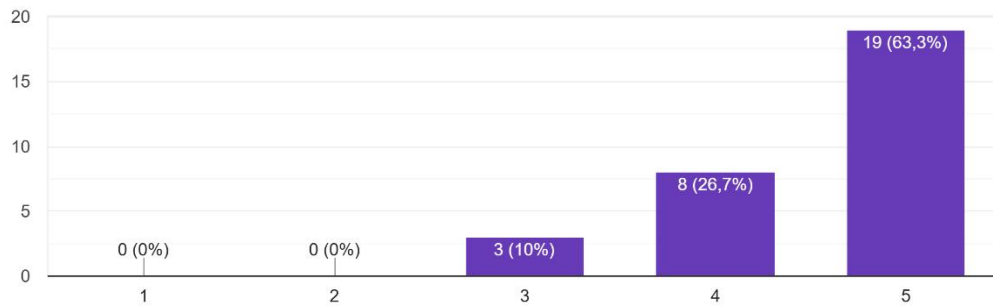
How clear is the pronunciation of the words in the audio? Seberapa jelas pengucapan kata-kata dalam audio?

30 jawaban



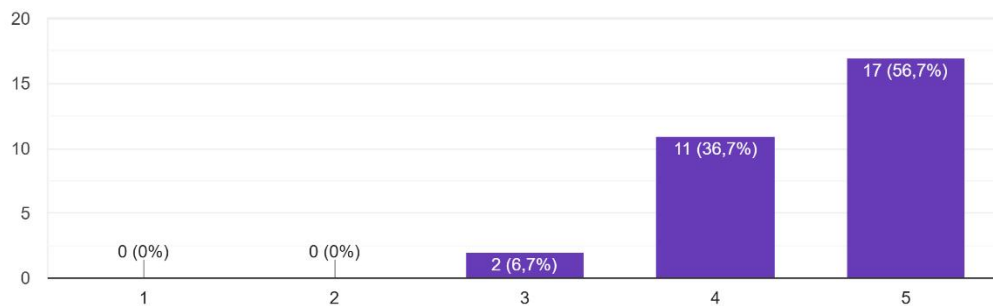
How natural is the intonation (rise and fall of pitch) in the sentence? Seberapa natural intonasi (naik turunnya nada) dalam kalimat tersebut?

30 jawaban



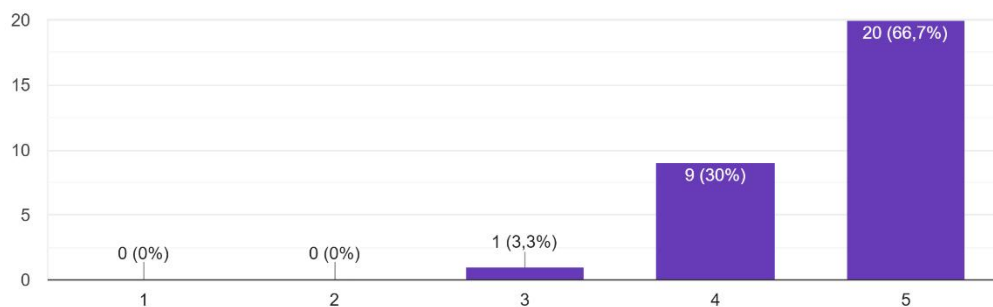
How comfortable is the sound to hear (without disturbing noise)? Seberapa nyamankah suara tersebut untuk didengar (tanpa suara bising yang mengganggu)?

30 jawaban



Overall, how is the sound quality? Secara keseluruhan, bagaimana kualitas suaranya?

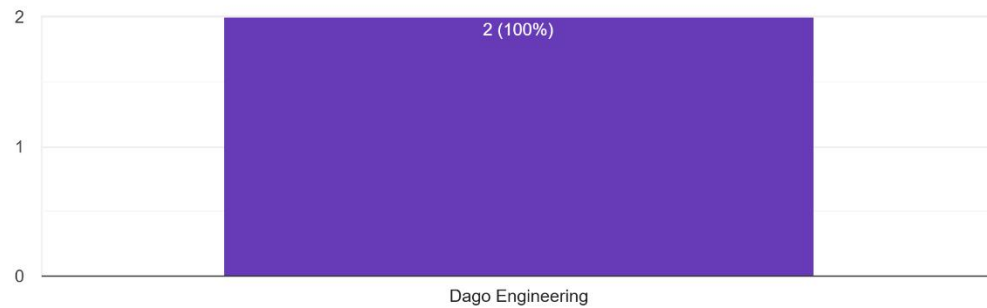
30 jawaban



Appendix 12. Media Expert Test Result

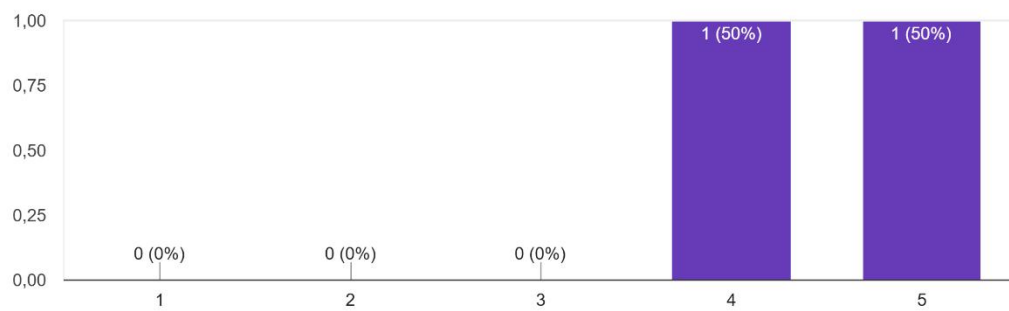
Institution Instansi

2 jawaban



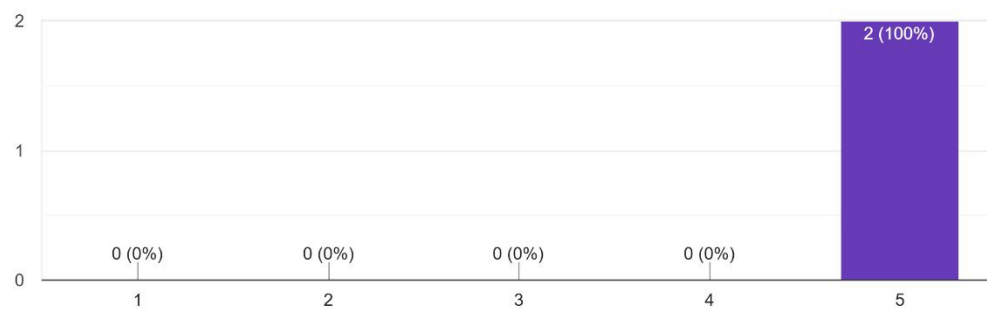
The size of the symbol (button, frame) is appropriate Ukuran simbol (tombol, bingkai) sesuai

2 jawaban



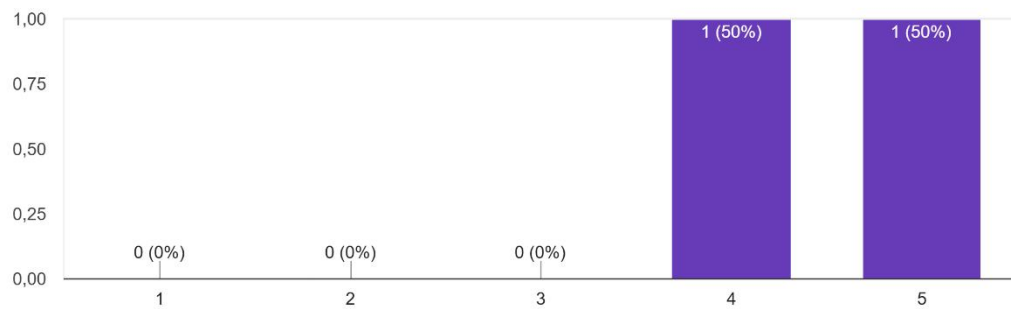
Symbol placement (buttons, frames) is appropriate Penempatan simbol (tombol, bingkai) sesuai

2 jawaban



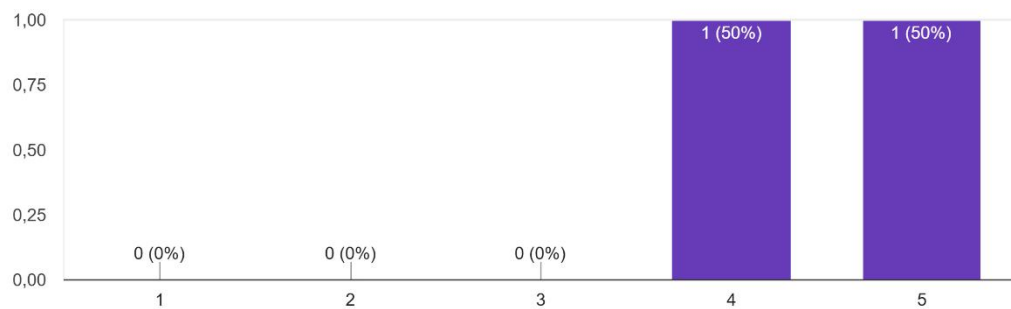
Font types and sizes on easy to read media Jenis dan ukuran font pada media yang mudah dibaca

2 jawaban



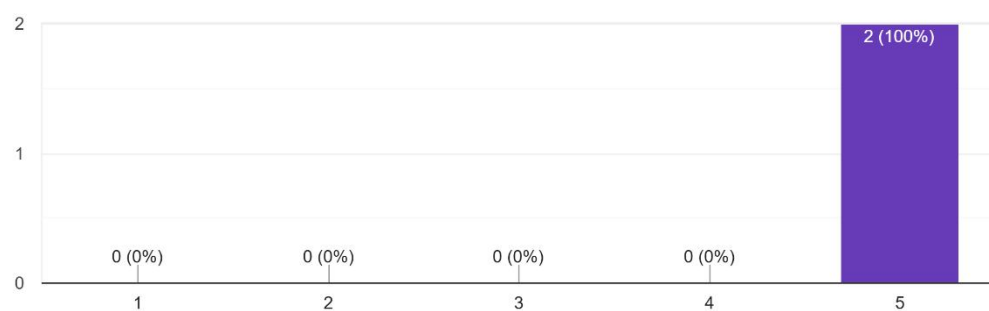
Text colors used on media are easy to read Warna teks yang digunakan pada media mudah dibaca

2 jawaban



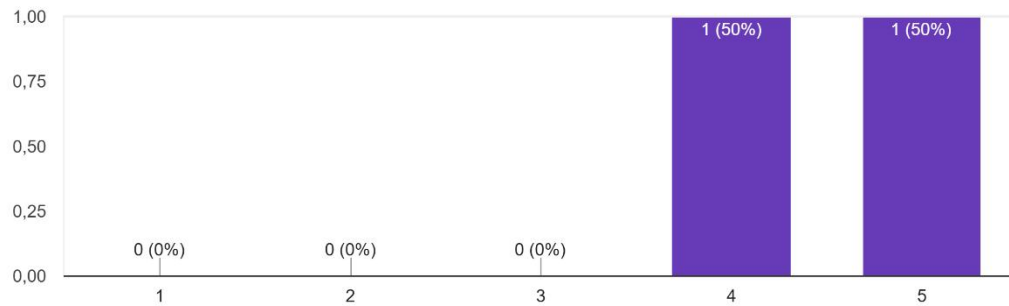
The composition of the images in the media is appropriate Komposisi gambar di media sudah sesuai

2 jawaban



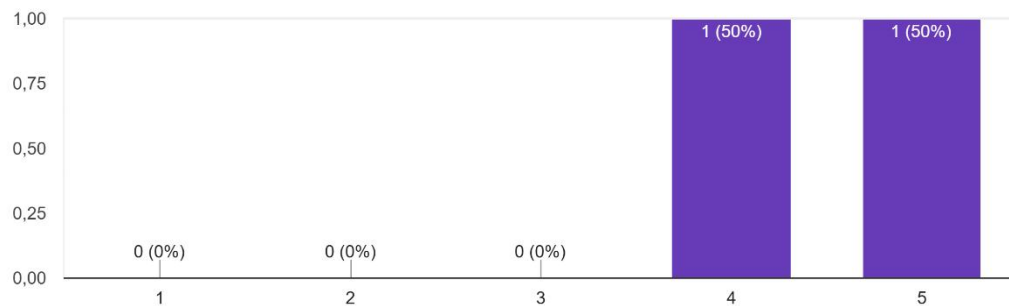
The size and quality of the images displayed on the media are appropriate Ukuran dan kualitas gambar yang ditampilkan pada media sudah sesuai

2 jawaban



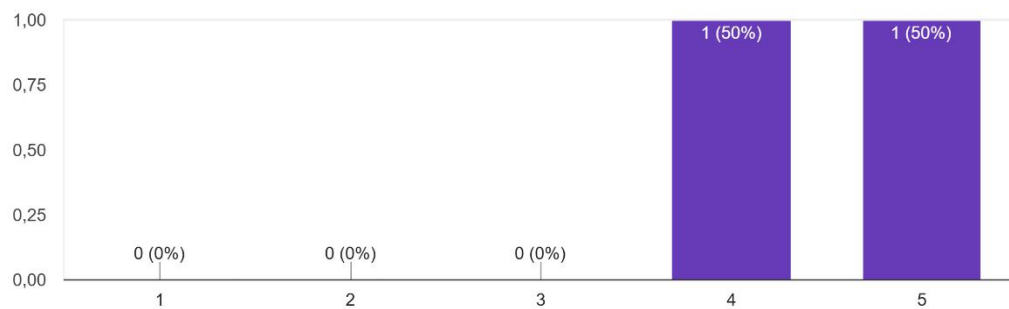
The accuracy of the placement of images on the media is appropriate Keakuratan penempatan gambar pada media sudah tepat

2 jawaban



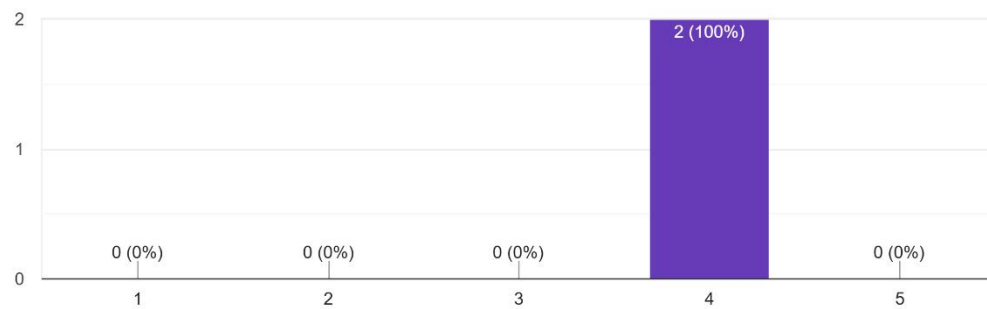
Animation fit with the material Animasi sesuai dengan materi

2 jawaban



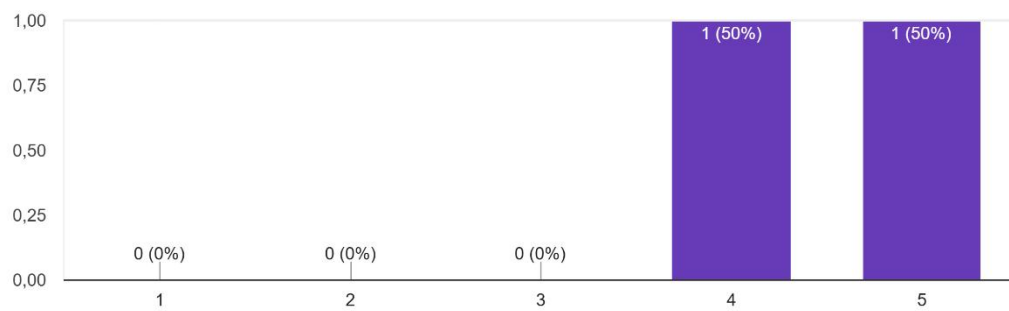
The selection of animations is already interesting Pemilihan animasi sudah menarik

2 jawaban



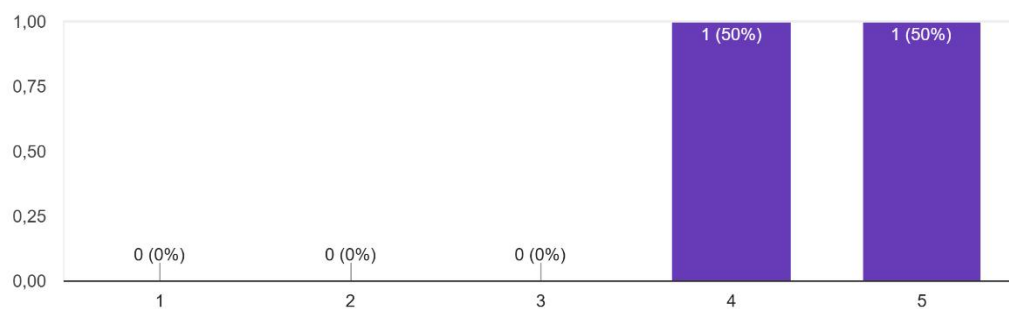
The backsound used is in accordance with the material Backsound yang digunakan sesuai dengan materi

2 jawaban



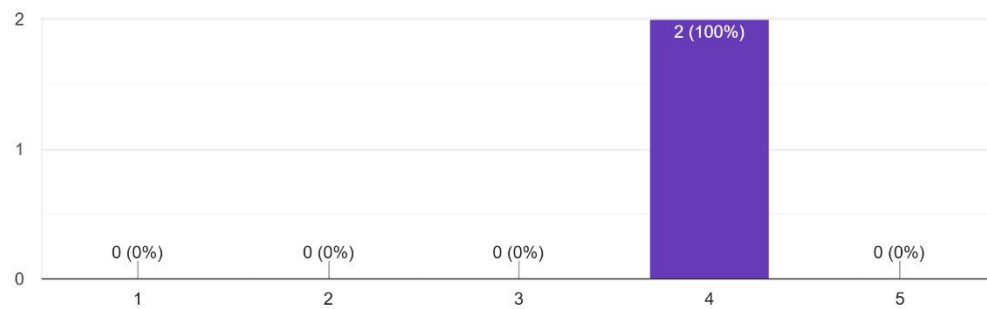
The sound effects used are in accordance with the animation Efek suara yang digunakan sesuai dengan animasi

2 jawaban



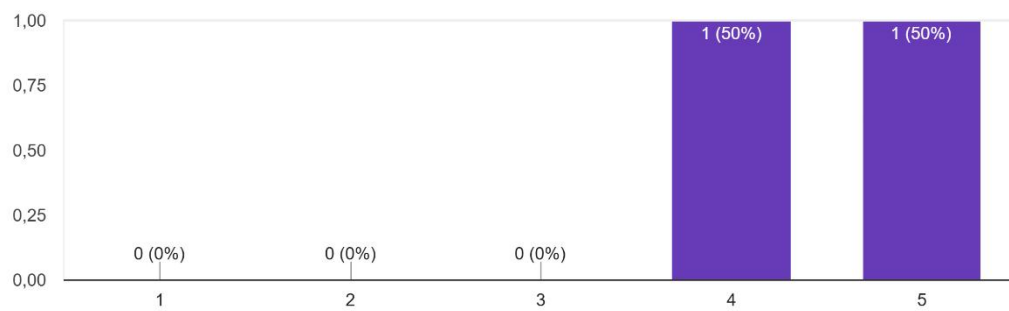
The cover in the learning media is appropriate Cover di media pembelajaran sudah sesuai

2 jawaban



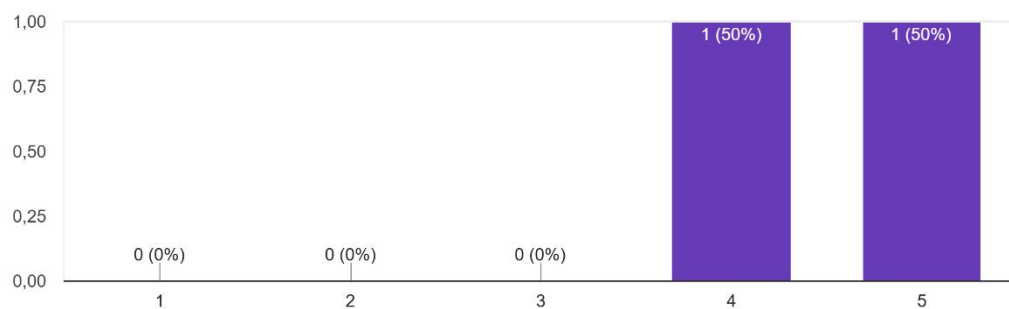
The display of learning media with the content of the material is appropriate Tampilan media pembelajaran dengan isi materi sudah sesuai

2 jawaban



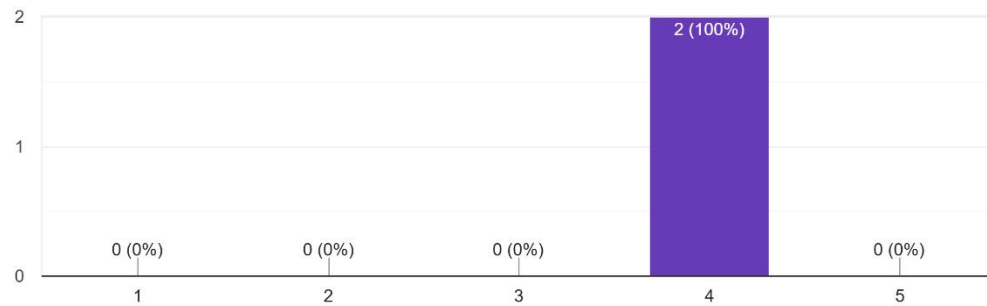
Flexibility of learning media (can be used independently and guided) Fleksibilitas media pembelajaran (dapat digunakan secara mandiri dan terbimbing)

2 jawaban



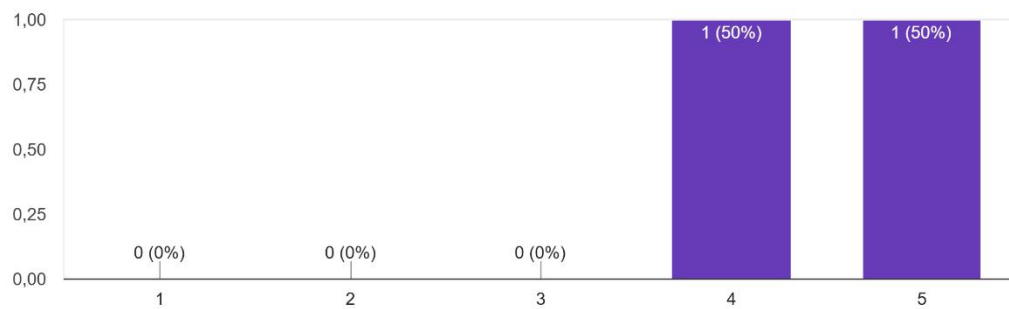
Instructions for the use of learning media are appropriate Petunjuk penggunaan media pembelajaran sudah tepat

2 jawaban



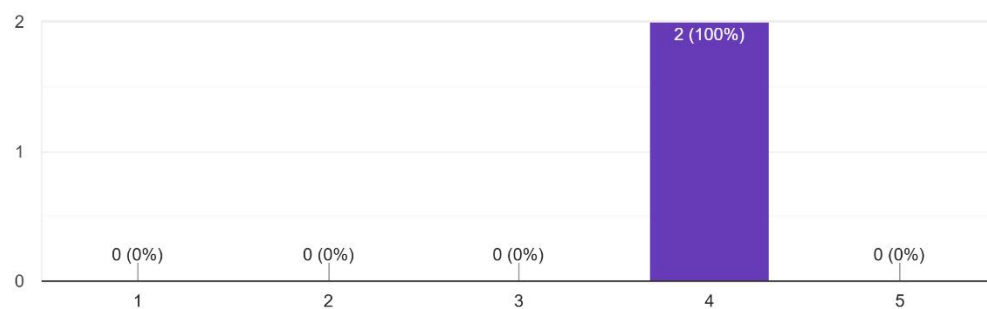
Complete instructions usage Kelengkapan petunjuk penggunaan

2 jawaban



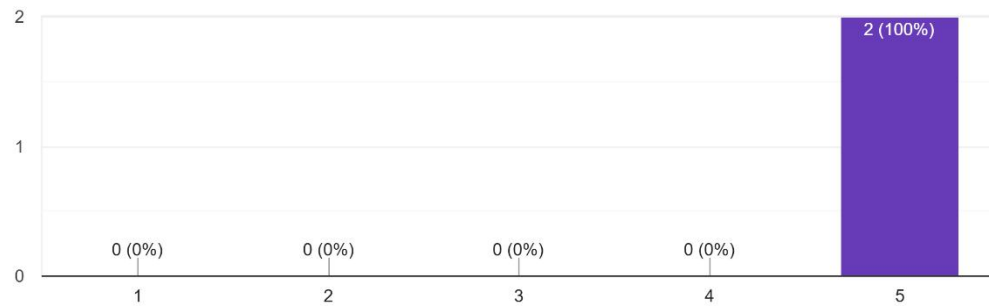
The ease of operation of learning media is appropriate Kemudahan pengoperasian media pembelajaran sudah tepat

2 jawaban



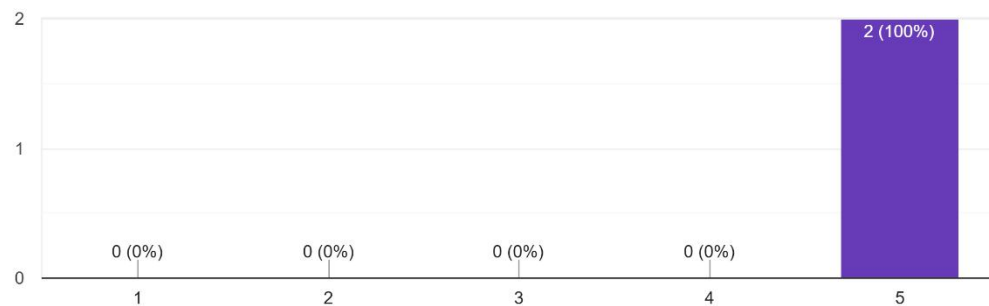
The use of navigation buttons on learning media is appropriate Penggunaan tombol navigasi pada media pembelajaran sudah tepat

2 jawaban



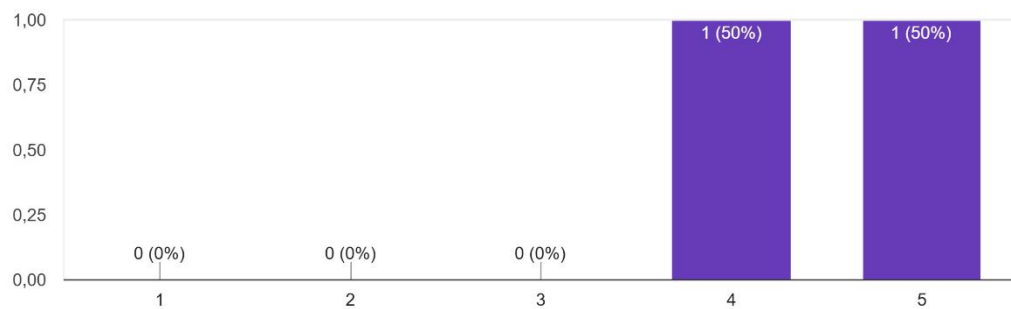
The consistency of the shape and position of navigation in the media is appropriate Konsistensi bentuk dan posisi navigasi di media sudah tepat

2 jawaban



Media functionality is appropriate Fungsionalitas media sudah sesuai

2 jawaban



Appendix 13. Question Item Test Results

UJI VALIDITAS SOAL
DEVELOPMENT OF A BALINESE TRADITION AND RITE QUIZ GAME WITH
TEXT TO SPEECH FEATURE

Nama : I Nyoman Sugita Rupiana, S.Sn., M.Pd
Pekerjaan : Dosen
Tanggal Pengujian : 16 Mei 2025

Petunjuk:
Berikan tanda petik (✓) pada kolom yang disediakan, sesuai dengan penilaian validitas. Apabila terdapat saran atau masukan silahkan tuliskan pada kolom saran.

Indikator:

1. Valid
2. Tidak valid

Untuk soal pada kuis dapat dilihat pada halaman berikutnya.

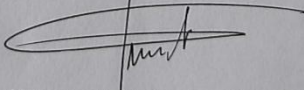
Saran:

Semua instrumen soal sudah sesuai dan valid, namun ada beberapa soal yang harus nolisin di bagian lain yang berbeda.

Kesimpulan:

Lingkari salah satu opsi dibawah ini.

4. Layak uji coba tanpa revisi
5. Layak uji coba dengan revisi sesuai saran
6. Tidak layak

Singaraja, 16 Mei 2025
Ahli Isi,

I Nyoman Sugita Rupiana, S.Sn., M.Pd.

UJI VALIDITAS SOAL
DEVELOPMENT OF A BALINESE TRADITION AND RITE QUIZ GAME WITH
TEXT TO SPEECH FEATURE

Nama : I Nyoman Hari Mukti Dananjaya, S.Ag., M.Ag.

Pekerjaan : Dosen

Tanggal Pengujian : 16 Mei 2025

Petunjuk:

Berikan tanda petik (✓) pada kolom yang disediakan, sesuai dengan penilaian validitas. Apabila terdapat saran atau masukan silahkan tuliskan pada kolom saran.

Indikator:

1. Valid
2. Tidak Valid

Untuk soal pada kuis dapat dilihat pada halaman berikutnya.

Saran:

Jangan mengulang soal meskipun memiliki nama yg berbeda, perbaiki
 apa yg saya berikan catatan

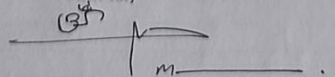
Kesimpulan:

Lingkari salah satu opsi dibawah ini.

1. Layak uji coba tanpa revisi
- ② Layak uji coba dengan revisi sesuai saran
3. Tidak layak

Singaraja, 16 Mei 2025

Ahli Isi,



I Nyoman Hari Mukti Dananjaya, S.Ag., M.Ag.

INSTRUMEN PENILAIAN BUTIR SOAL

Soal	Indikator		Soal	Indikator	
	Valid	Tidak Valid		Valid	Tidak Valid
1	✓		35	✓	
2	✓		36	✓	
3	✓		37	✓	
4	✓		38	✓	
5	✓		39	✓	
6	✓		40	✓	
7	✓		41	✓	
8	✓		42	✓	
9	✓		43	✓	
10	✓		44	✓	
11	✓		45	✓	
12	✓		46	✓	
13	✓		47	✓	
14	✓		48	✓	
15	✓		49	✓	
16	✓		50	✓	
17	✓		51	✓	
18	✓		52	✓	
19	✓		53	✓	
20	✓		54	✓	
21	✓		55	✓	
22	✓		56	✓	
23	✓		57	✓	
24	✓		58	✓	
25	✓		59	✓	
26	✓		60	✓	
27	✓		61	✓	
28	✓		62	✓	
29	✓		63	✓	
30	✓		64	✓	
31	✓		65	✓	
32	✓		66	✓	
33	✓		67	✓	
34	✓		68	✓	

Soal	Indikator		Soal	Indikator	
	Valid	Tidak Valid		Valid	Tidak Valid
69	✓		103	✓	
70	✓		104	✓	
71	✓		105	✓	
72	✓		106	✓	
73	✓		107	✓	
74	✓		108	✓	
75	✓		109	✓	
76	✓		110	✓	
77	✓		111	✓	
78	✓		112	✓	
79	✓		113	✓	
80	✓		114	✓	
81	✓		115	✓	
82	✓		116	✓	
83	✓		117	✓	
84	✓		118	✓	
85	✓		119	✓	
86	✓		120	✓	
87	✓		121	✓	
88	✓		122	✓	
89	✓		123	✓	
90	✓		124	✓	
91	✓		125	✓	
92	✓		126	✓	
93	✓		127	✓	
94	✓		128	✓	
95	✓		129	✓	
96	✓		130	✓	
97	✓		131	✓	
98	✓		132	✓	
99	✓		133	✓	
100	✓		134	✓	
101	✓		135	✓	
102	✓				

Appendix 14. Content Expert Test Results

Content Expert Test
DEVELOPMENT OF A BALINESE TRADITION AND RITE QUIZ GAME WITH
TEXT TO SPEECH FEATURE

Validator : I Nyoman Sugita Rupiana, S.Sn., M.Pd.
Profession : Lecturer
Day, date : 14 July 2025

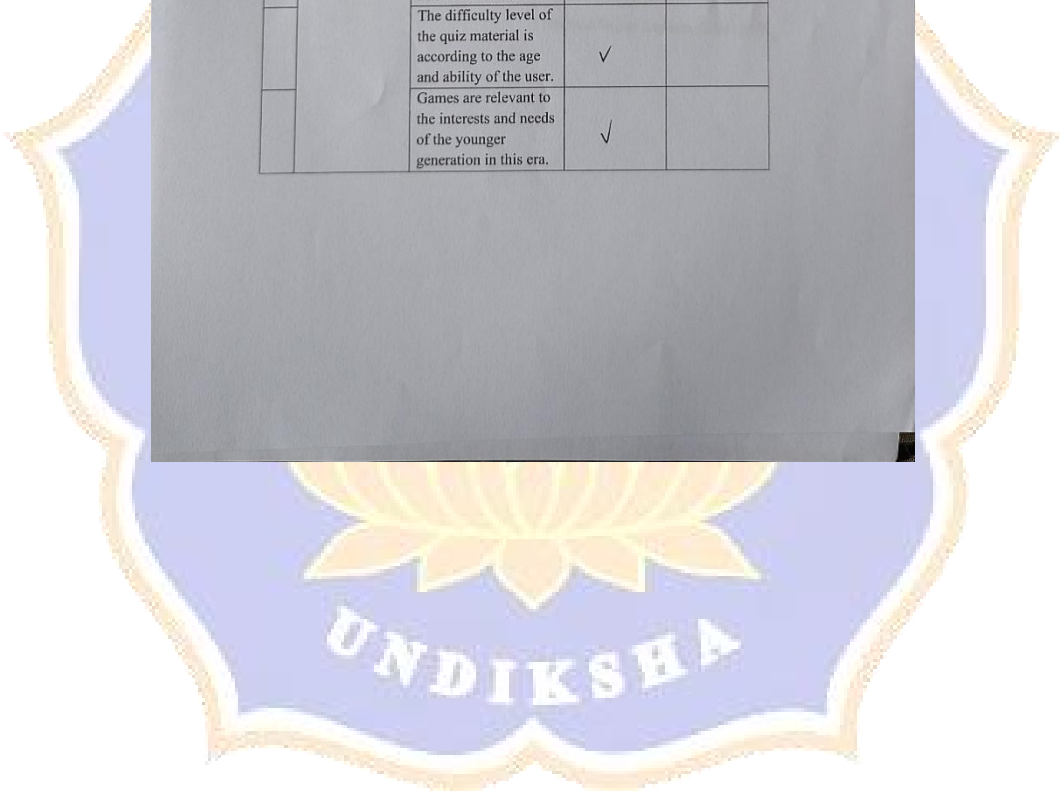
Instructions:
Please give a sign (√) in the assessment column that is already available.
The assessment consists of two alternatives.

- Relevant : If the instrument is in accordance with the assessed aspect.
- Irrelevant : If the instrument is not in accordance with the assessed aspect.

If there are suggestions or inputs, you can include them in the notes column that has been provided.

No	Indicator Research	Grain Valuation	Revelansi	
			Relevant	Irrelevant
1	Content Quality	The content of the material is in accordance with the purpose of introducing Balinese traditions and rites.	√	
		The quiz material used in the quiz educational game is valid.	√	
		In-game activities can support users to gain	√	

		insight into Balinese traditions and rites.		
		The content of the game can foster the spirit of preserving Balinese traditions and rites among the younger generation.	✓	
		The content of the material does not contain ambiguity.	✓	
2	Relevance to Target Audience	The language used corresponds to the user's level of understanding.	✓	
		The material presented can provide information about more complex traditions and rites.	✓	
		Different stage elements are able to increase the player's interest in learning more about Balinese traditions and rites	✓	
		The difficulty level of the quiz material is according to the age and ability of the user.	✓	
		Games are relevant to the interests and needs of the younger generation in this era.	✓	



UNDIKSHA

Suggestion:

Semu ya ahli ih i mawana Sikel Sema
keluan dan Pemas daga mawana

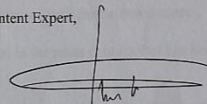
Conclusion:

Circle one of the options below that you think is appropriate:

- ☒ 1. Worth a media trial without revisions
2. Feasible media trials with revisions as suggested
3. Not worthy

Singaraja, 14 July 2025

Content Expert,



I Nyoman Sugita Rupiana, S.Sn., M.Pd.

UNDIKSHA

Content Expert Test
DEVELOPMENT OF A BALINESE TRADITION AND RITE QUIZ GAME WITH
TEXT TO SPEECH FEATURE

Validator : I Nyoman Hari Mukti Dananjaya, S.Ag., M.Ag.

Profession : Lecturer

Day, date : 14 July 2025

Instructions:

Please give a sign (√) in the assessment column that is already available.

The assessment consists of two alternatives.

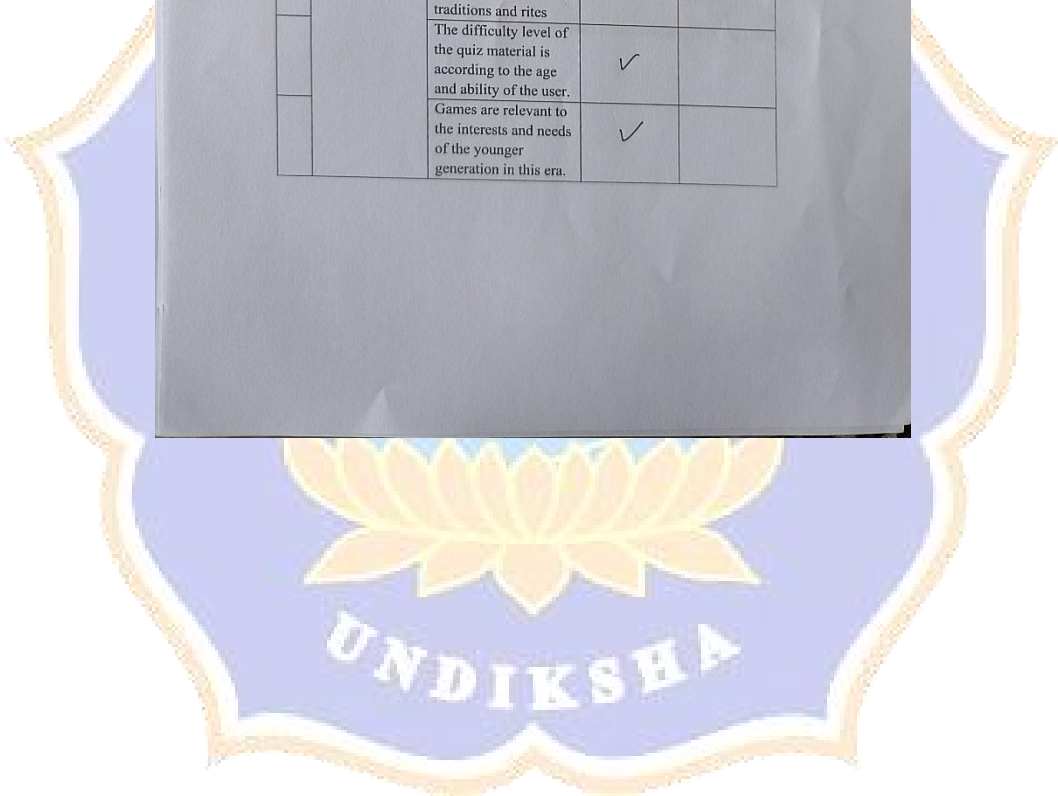
- **Relevant** : If the instrument is in accordance with the assessed aspect.
- **Irrelevant** : If the instrument is not in accordance with the assessed aspect.

If there are suggestions or inputs, you can include them in the notes column that has been provided.

No	Indicator Research	Grain Valuation	Revelansi	
			Relevant	Irrelevant
1	Content Quality	The content of the material is in accordance with the purpose of introducing Balinese traditions and rites.	√	
		The quiz material used in the quiz educational game is valid.	√	
		In-game activities can support users to gain	√	

UNDIKSHA

		insight into Balinese traditions and rites.		
		The content of the game can foster the spirit of preserving Balinese traditions and rites among the younger generation.	✓	
		The content of the material does not contain ambiguity.	✓	
2	Relevance to Target Audience	The language used corresponds to the user's level of understanding.	✓	
		The material presented can provide information about more complex traditions and rites.	✓	
		Different stage elements are able to increase the player's interest in learning more about Balinese traditions and rites	✓	
		The difficulty level of the quiz material is according to the age and ability of the user.	✓	
		Games are relevant to the interests and needs of the younger generation in this era.	✓	



UNDIKSHA

Suggestion:

.....

.....

.....

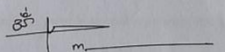
Conclusion:

Circle one of the options below that you think is appropriate:

- ☒ 1. Worth a media trial without revisions
- ☐ 2. Feasible media trials with revisions as suggested
- ☐ 3. Not worthy

Singaraja, 14 July 2025

Content Expert,



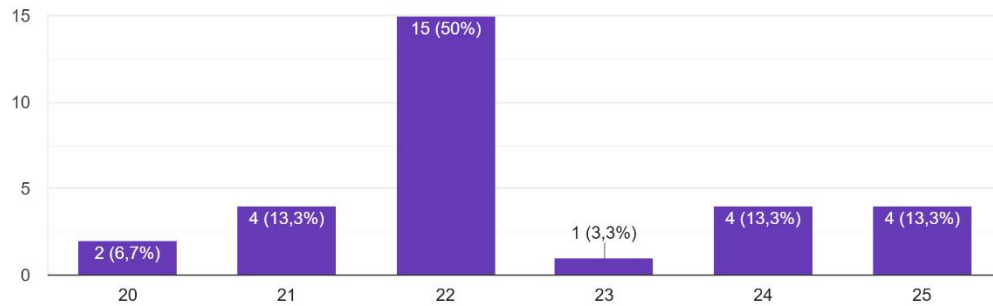
I Nyoman Hari Mukti Dananjaya, S.Ag., M.Ag.



Appendix 15. User Test Results

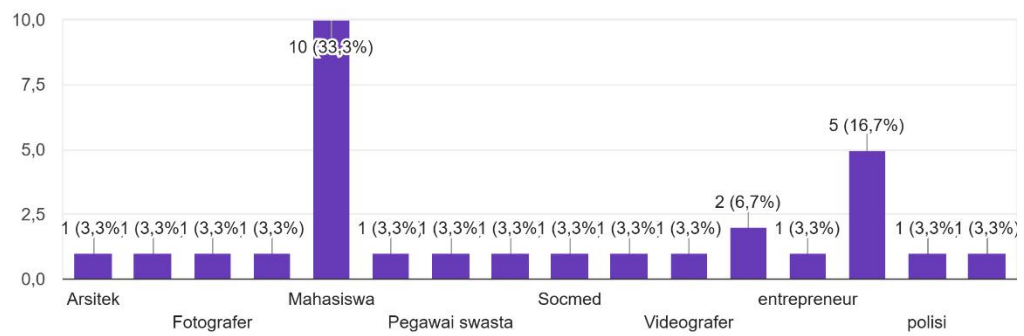
Age Umur

30 jawaban



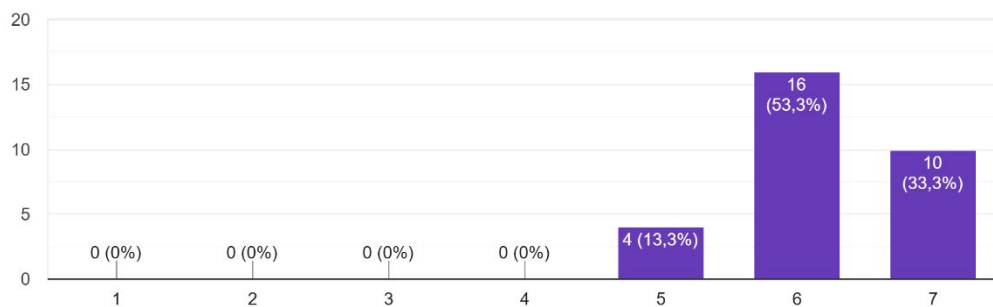
Job Pekerjaan

30 jawaban



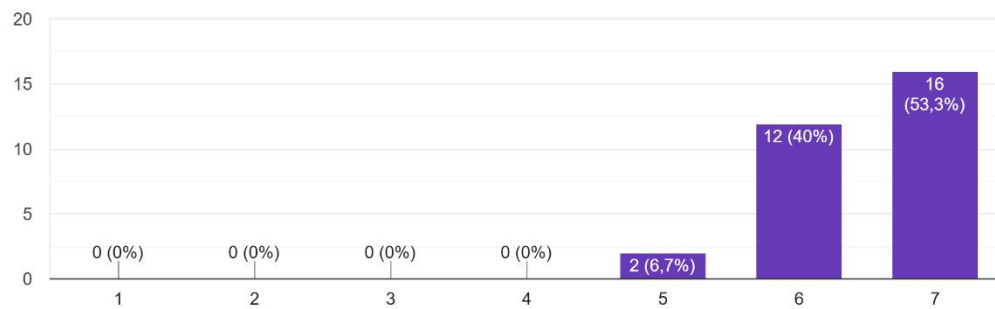
Does this app feel supportive of your activities in learning Balinese traditions and rituals? Apakah aplikasi ini terasa mendukung aktivitas Anda dalam belajar tradisi dan ritus Bali?

30 jawaban



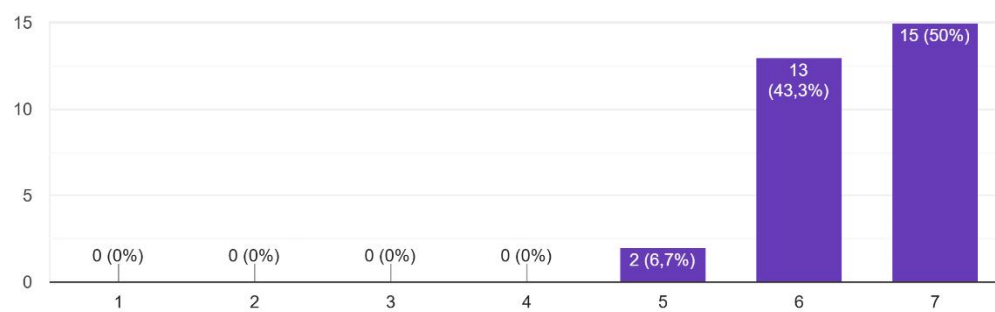
How simple is this app to use? Seberapa sederhana penggunaan aplikasi ini?

30 jawaban



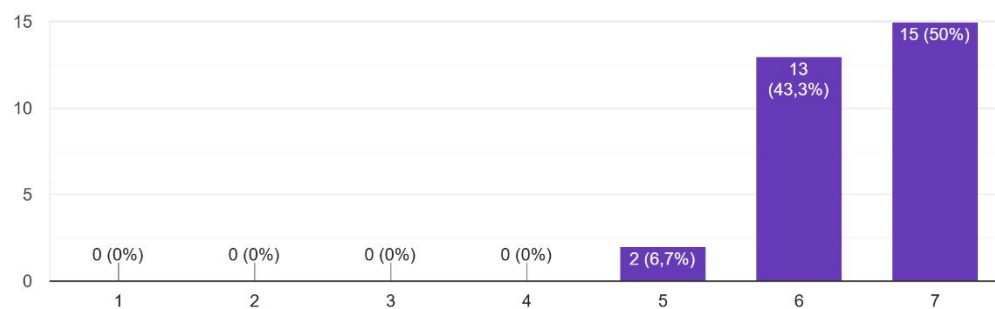
How would you rate the user flow of this application? Bagaimana Anda menilai alur penggunaan aplikasi ini?

30 jawaban



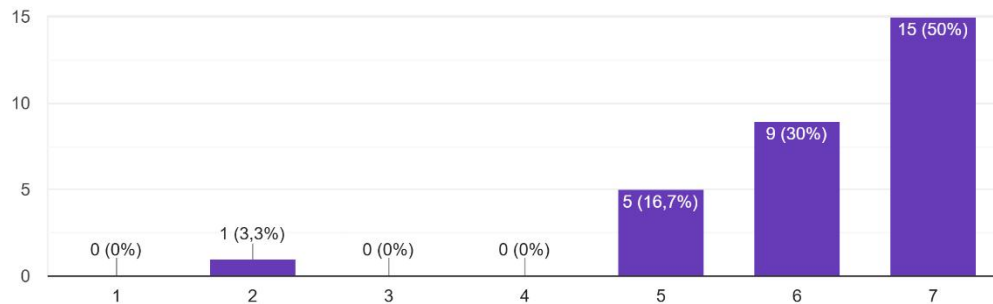
How clear are the instructions and information in the app? Seberapa jelas instruksi dan informasi di dalam aplikasi?

30 jawaban



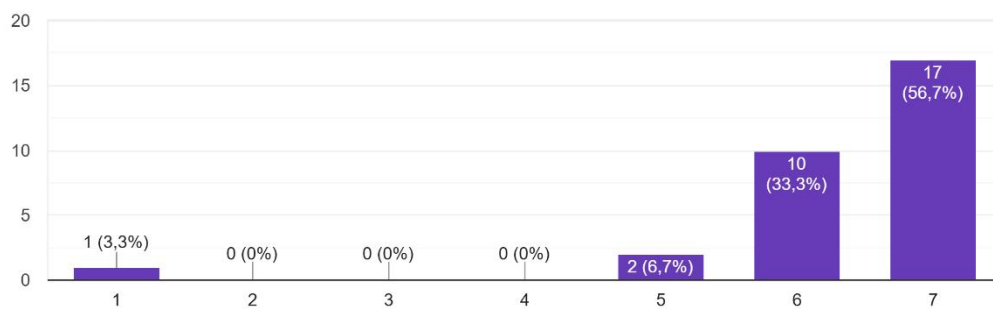
How exciting was your experience while using this app? Seberapa mengasyikkan pengalaman Anda saat menggunakan aplikasi ini?

30 jawaban



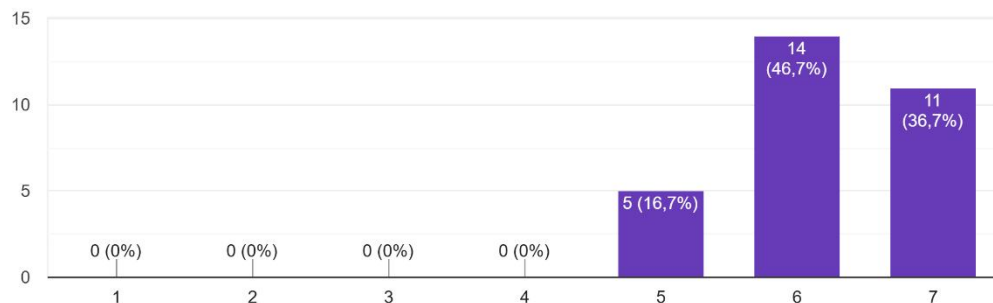
How attractive is the appearance and design of this application? Seberapa menarik tampilan dan desain aplikasi ini?

30 jawaban



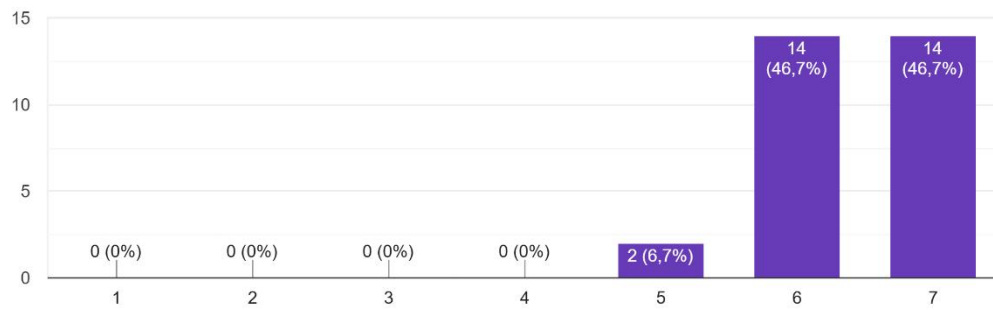
What is your impression of the design of this application? Bagaimana kesan Anda terhadap desain aplikasi ini?

30 jawaban



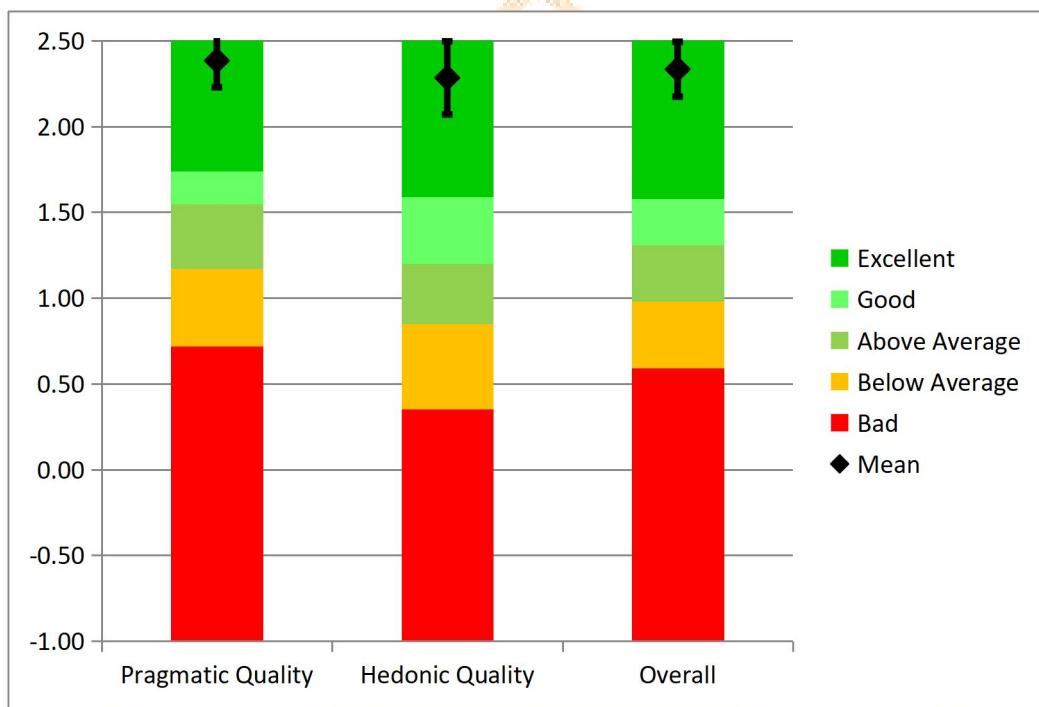
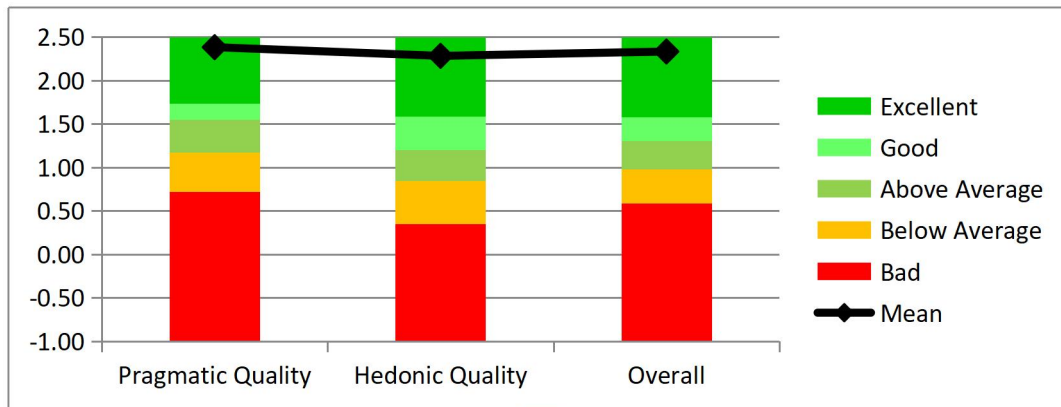
How creative do you think this app is? Menurut Anda, seberapa kreatif aplikasi ini?

30 jawaban



Appendix 16. UEQ Calculation Results

Items							
1	2	3	4	5	6	7	8
6	7	7	6	7	7	6	7
6	7	7	6	7	7	6	6
7	7	7	6	7	6	6	6
7	7	7	7	7	7	7	6
7	6	7	6	7	7	7	7
7	6	7	7	6	7	7	7
7	6	6	7	7	7	7	7
6	6	6	6	6	6	6	6
6	7	7	7	6	6	6	5
6	5	6	6	5	7	5	6
5	6	6	6	7	7	5	6
7	7	7	7	7	7	7	7
6	6	6	6	2	1	7	6
7	7	7	7	7	7	7	7
6	6	6	6	6	7	6	6
6	7	7	7	6	7	6	6
6	7	7	7	7	7	7	7
6	7	6	6	7	5	6	7
6	7	6	5	6	7	7	6
7	7	6	7	5	5	7	7
5	6	5	6	5	6	5	7
6	6	7	6	7	6	6	6
7	7	7	7	7	7	6	7
5	6	5	7	6	6	5	7
6	6	6	6	6	7	6	6
7	6	6	7	7	6	6	7
5	7	6	7	6	6	6	6
6	5	7	7	5	7	7	5
6	7	7	7	5	6	6	6
6	7	6	5	7	6	5	7



Appendix 17. Application Test Documentation





Appendix 18. Interview Dago Engineering Team

