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Text-to-Speech Synthesis in Computer-Assisted Language Learning for Irish: Development and Evaluation

Neasa Ní Chiaráin

Volume 2

Thesis submitted for the degree of Doctor of Philosophy
School of Linguistic, Speech and Communication Sciences
Trinity College, Dublin
2014
Declaration

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Neasa Ní Chiaráin, September 2014
## Contents

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1: Digichaint Development</td>
<td>347</td>
</tr>
<tr>
<td>A2: Fáilte go TCD</td>
<td>348</td>
</tr>
<tr>
<td>A3: Taidhgín</td>
<td>350</td>
</tr>
<tr>
<td>B1: Teacher Pre-Test Questionnaire</td>
<td>356</td>
</tr>
<tr>
<td>B2: Teacher Test</td>
<td>358</td>
</tr>
<tr>
<td>B3: Sentences used in Teacher Evaluation</td>
<td>359</td>
</tr>
<tr>
<td>B4: Teacher Post-Test Questionnaire</td>
<td>361</td>
</tr>
<tr>
<td>C1: Pupil Pre-Game Questionnaire</td>
<td>362</td>
</tr>
<tr>
<td>C1.1: Irish Language Version</td>
<td>362</td>
</tr>
<tr>
<td>C1.2: English Language Version</td>
<td>364</td>
</tr>
<tr>
<td>C2: Pupil Post-Game Questionnaire: Digichaint</td>
<td>367</td>
</tr>
<tr>
<td>C3: Pupil Post-Game Questionnaire: Fáilte go TCD</td>
<td>372</td>
</tr>
<tr>
<td>C4: Pupil Post-Game Questionnaire: Taidhgín</td>
<td>376</td>
</tr>
<tr>
<td>D1: Teacher Evaluation Results</td>
<td>380</td>
</tr>
<tr>
<td>D2: Calculation of Intelligibility and Clarity Index</td>
<td>382</td>
</tr>
<tr>
<td>E1: Post-Game Questionnaire Results (Descriptive Results): Digichaint</td>
<td>384</td>
</tr>
<tr>
<td>E2: Post-Game Questionnaire Results (Descriptive Results): Fáilte go TCD</td>
<td>389</td>
</tr>
<tr>
<td>E3: Post-Game Questionnaire Results (Descriptive Results): Taidhgín</td>
<td>392</td>
</tr>
<tr>
<td>F1: Kruskal-Wallis Test Results: Digichaint</td>
<td>395</td>
</tr>
<tr>
<td>F2: Kruskal-Wallis Test Results: Fáilte go TCD</td>
<td>417</td>
</tr>
<tr>
<td>F3: Kruskal-Wallis Test Results: Taidhgín</td>
<td>440</td>
</tr>
<tr>
<td>G1: Spearman's Rank Correlation Coefficient for Digichaint</td>
<td>456</td>
</tr>
<tr>
<td>G2: Spearman's Rank Correlation Coefficient for Fáilte go TCD</td>
<td>459</td>
</tr>
<tr>
<td>G3: Spearman's Rank Correlation Coefficient for Taidhgín</td>
<td>461</td>
</tr>
<tr>
<td>H1: Digichaint Statistical Analysis</td>
<td>463</td>
</tr>
<tr>
<td>H2: Fáilte go TCD Statistical Analysis</td>
<td>473</td>
</tr>
<tr>
<td>H3: Taidhgín Statistical Analysis</td>
<td>478</td>
</tr>
</tbody>
</table>
Appendix A

A1: Digichaint Development

Digichaint narrative showing progression through conversation turns
Transcript of Scene in Front Square

Cailín: Bhi mé ag smaointeoimh ar dhul go Meirceá an samhradh seo chun obair a fháil, ach anois ní gá dom. Fuair mé post inné –

Fear 1: Ó...

Cailín: treorá le comhlacht turasóireachta – tá mé ar bís mar gheall air mar tá airgead math le déanamh air agus beidh mé ag dul timpeall na tire chun na háiteanna suimíula ar fad a theiceál – go Tír Chonaill, Corcaigh, Cill Aime, Port Láirge agus cá bhfíos cé na háiteanna eile. Tá mé ag dréim go mór le bheith ag dul trasna na tire

Fear 1: Muise, fair play dhuit


Cailín: Bhuel, ní féidir liom aon gheallánta a thabhairt, ach deir siad go bhfuil go leor leor cuairteoirí le bheith ag teacht go dtí an t-áth seo i mblíonna – tá go leor daoine le bheith ag teacht ó Mhór-Roinn na hEorpa – beidh go dtí teoraithe the teangacha ãagusála.

Fear 2: Bheadh an-spéis agamsa ann. Tá Fraincis líofa agam agus tá Spáinníras réasúnta maith agam chomh maith. Is on Frainc mo mháthair agus Frainc is labhair si linn sa bhaile nuair a bhíomar óg. Bheadh an-spéis agam teangacha ãagusála a úsáid agus is beag rud nach bhfuil ar eolas agam faoin tír seo. Ceapaim go mbeinn an-oiriúinach don chineál seo oibre. Tá sé thar a bheith tábhachtach go bhfuil an spéisíochtaí a bhí agam le thúrthi – tá fomhá na tíre ag brath ar a leithéid seo.

Aural Comprehension Test Questions:

1. Cén fáth nach bhfuil cainteoir 1 ag dul go Meirceá? / Why is speaker 1 not going to America?
2. Cén lá a bheidh si ag tosú ina post nua? / What day will she start her new job?
3. Cén plan a bhi ag an dara cainteoir don Satharn? / What plan had speaker 2 for
Saturday?
4. Cén fáth a bhfuil spéis ag cainteoir 2 sa phhost? / Why is Speaker 2 interested in the job?
5. Cén teanga a labhair cainteoir 3 sa bhaile lena mháthair nuair a bhí sé óg? / What language did speaker 3 speak to his mother when he was young?

Translation of Transcription:

**Girl:** I was thinking of getting work in America this summer, but now I don’t need to. I got a job yesterday –

**Guy 1:** Oh...

**Girl:** a tour guide with a tour company – I’m delighted with it because you can make good money at it and I’ll be going around the country visiting lots of interesting places – Donegal, Cork, Killarney, Waterford, and who knows what other places. I’m really looking forward to travelling around the country

**Guy 1:** Well, fair play to you

**Cailin:** And – another thing – I have to start next Saturday – there’s a group of 120 Japanese coming and it’s up to me to show them around Dublin. I’m allowed to employ two more people to help me on Saturday – the group is too big for one tour guide – would either of you be interested in the job? They pay 100euro for the day.

**Guy 1:** Sure, I’d be interested – the only problem I have is that I’m supposed to be playing a match that goes on until midday Saturday. Do you think there’d be reasonably regular work available with this company? If there were, I wouldn’t bother with the match. I have to make some money this summer – I won’t be able to come back to this college next year if I don’t have money.

**Cailin:** Well, I can’t make any promises, but they do tell me that they’re expecting a lot of visitors to this country this year – there are a lot of people expected from mainland Europe – they’ll need tourguides with various different languages.

**Guy 2:** I would be very interested in it. I speak fluent French and I have reasonably good Spanish too. My mother’s French and she spoke French to us when we were young. I would love to use the various languages I have and there is little I don’t know about this country. I think I’d be very suitable for this type of work. It’s crucial that visitors to the country get a good impression of it – the country’s image is depending on this kind of thing.
A3: Taidhgin

A sample conversation between a student and Taidhgin is included here showing one possible path through the Taidhgin system. The student (middle column) begins the conversation and Taidhgin’s responses are in the 3rd column.

<table>
<thead>
<tr>
<th>General Topics</th>
<th>Sample Student Input</th>
<th>Taidhgin’s Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greeting</td>
<td>Dia Dhuit</td>
<td>Dia is Muire dhuit, cén chaoi a bhfuil tú?</td>
</tr>
<tr>
<td>Hello</td>
<td></td>
<td>Hello, how are you?</td>
</tr>
<tr>
<td></td>
<td>Go maith, go raibh maith agat</td>
<td>Tá sé sin go maith! Cén t-ainm atá ort?</td>
</tr>
<tr>
<td>Great, thanks</td>
<td></td>
<td>That’s good! What’s your name?</td>
</tr>
<tr>
<td>Name</td>
<td>[AINM] is ainm dom</td>
<td>Deas bualadh leat, a [AINM]! Cén aois thú?</td>
</tr>
<tr>
<td></td>
<td>[NAME] is my name</td>
<td>Nice to meet you [NAME]! What age are you?</td>
</tr>
</tbody>
</table>
17 bliain d’aois

if 1 – 3
if 4 – 12
if 13 – 15
* if 16 – 18
if 19 – 30
if 31 – 100

17 years old

if 1 – 3
if 4 – 12
if 13 – 15
* if 16 – 18
if 19 – 30
if 31 – 100

Oh seventeen years old. Are you still in school?

Táim fós ar scoil

I’m still at school

Nach méanar duit! Agus cé mhéad deartháir agus deirfiúr atá agat?

Isn’t it well for you! Any how many brothers and sisters do you have?

Tá 2 deirfiúr agam

I have 2 sisters

Beirt deirfiúir! Agus an bhfuil na deirfiúrachta seo níos óige nó níos sine ná tusa?
<table>
<thead>
<tr>
<th>Place of Residence</th>
<th>Two sisters! And are these sisters younger or older than you?</th>
</tr>
</thead>
<tbody>
<tr>
<td>if only child</td>
<td></td>
</tr>
<tr>
<td>if 1 brother</td>
<td></td>
</tr>
<tr>
<td>if 1 sister</td>
<td></td>
</tr>
<tr>
<td>if 1 brother &amp; 1 sister</td>
<td></td>
</tr>
<tr>
<td>if &gt;1 brother</td>
<td></td>
</tr>
<tr>
<td>* if &gt;1 sister</td>
<td></td>
</tr>
<tr>
<td>if &gt;1 brother &amp; 1 sister</td>
<td></td>
</tr>
<tr>
<td>etc.</td>
<td></td>
</tr>
<tr>
<td>Two sisters!</td>
<td></td>
</tr>
<tr>
<td>And are these</td>
<td></td>
</tr>
<tr>
<td>sisters younger</td>
<td></td>
</tr>
<tr>
<td>or older than</td>
<td></td>
</tr>
<tr>
<td>you?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>They're younger than me</th>
<th>Isn't that nice! And, where are you living?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tá siad níos óige ná mé</td>
<td>Nach deas é sin! Agus, cá bhful tú i do chónaí?</td>
</tr>
</tbody>
</table>

**Place of Residence**

<table>
<thead>
<tr>
<th>i mBaile Átha Cliath</th>
<th>Cén chuid de Bhaile Átha Cliath? Támi se i gColáiste na Tríonóide!</th>
</tr>
</thead>
<tbody>
<tr>
<td>* if Baile Átha</td>
<td>What part of Dublin? I'm in Trinity College!</td>
</tr>
<tr>
<td>Cliath</td>
<td></td>
</tr>
<tr>
<td>if Contae X</td>
<td></td>
</tr>
<tr>
<td>if X</td>
<td></td>
</tr>
<tr>
<td>etc.</td>
<td></td>
</tr>
</tbody>
</table>

| if Dublin            | Is deas an ceantar é sin ceart go leor!                           |
| if County X          | Céard a bhionn agat mar chaithéamh aimsire ann?                   |
| if X                 | That’s a nice area alright! What hobbies have you there?          |
| etc.                 |                                                                   |

**Drumcondra**

| i nDroim Conrach    |                                                                   |

352
Hobbies

Imrím peil

if imirt
if seinnt
if léamh
if éisteacht
if téigh
if gan caithamh aimsire
if X
etc.

I play football

If play (sport)
If play (music)
If read
If listen
If go
If without hobby
If X
etc.

Cén club lena bhfuil tú?

What club are you with?

Imrím leis an gcub áitiúil - Na Fianna

I play with the local club - Na Fianna

Tá sé sin suimiúil! An bhfuil a fhios agat, nil aon rud is fearr liomsa ná taisteal! An maith leat féin taisteal?

That's interesting! Do you know something, I prefer nothing more than travelling! Do you like travelling?

Is breá liom taisteal

Inis dom faoi na laethanta saoire ab fhéarr a bhi agat riamh...
<table>
<thead>
<tr>
<th>I love travelling</th>
<th>Tell me about the best holidays you've ever had...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travel/Holidays</strong></td>
<td><strong>Chuamar go dtí an Spáinn anuraidh</strong></td>
</tr>
<tr>
<td>if chaith</td>
<td>An ndeachaigh? Bionn sé go deas imeacht mar sin anois is arís. An mbeadh fonn ort dul ar ais?</td>
</tr>
<tr>
<td>if chuaigh</td>
<td>Did you (go)? It's nice to go away like that every now and then. Would you like to go back there?</td>
</tr>
<tr>
<td>if d'eatil</td>
<td></td>
</tr>
<tr>
<td>if d'fhain</td>
<td></td>
</tr>
<tr>
<td>if d'imigh</td>
<td></td>
</tr>
<tr>
<td>if X</td>
<td></td>
</tr>
<tr>
<td>etc.</td>
<td></td>
</tr>
<tr>
<td><strong>We went to Spain last year</strong></td>
<td><strong>I would love to visit Spain again</strong></td>
</tr>
<tr>
<td>if spent</td>
<td>Ní bhfuaireas féin laethanta saoire riabh i mo shaol! An bhfuil a fhios agat, caithfidh mise bailiú lion! Tá mór oibre le déanamh fós agam!</td>
</tr>
<tr>
<td>if went</td>
<td>I never got a holiday ever in my life! Do you know something, I have to head</td>
</tr>
<tr>
<td>if flew</td>
<td></td>
</tr>
<tr>
<td>if stayed</td>
<td></td>
</tr>
<tr>
<td>if departed</td>
<td></td>
</tr>
<tr>
<td>if X</td>
<td></td>
</tr>
</tbody>
</table>
off! I've a pile of work still to do!

Bhí sé an deas labhairt leat, a [AINM].

It was very nice to talk to you [NAME].

It was very nice to talk to you [NAME].

Bye [NAME], it was nice to meet you!

I'm Taidhgin – the first robot that speaks Irish. I hope there will be generations of Irish-speaking robots coming after me! ...Do you have any other question?
Appendix B

B1: Teacher Pre-Test Questionnaire

(Screenshot)

Ceistneoir
Céim 1 as 5

A mhúinteoir,

Táimid an-bhuach diet as páirt a ghlaocadh sa tuigde seo. Táimid ag díriú anseo ar ghuthanna sintéiseacha (cruthaithe mar chuid den tionscéal ABAIR.IE) agus a n-údheid i gcuichí idirghníomhacha atá curtha in airí ntí go speisialta do mhúinteodh/d'fhoghlaíonn na Gaeilge.

Tá ceithre chéim sa mhéid a leanaí:

1. Ión isteach réamh-cheistneoir chun eolas ginearálta a thabhairt duinn fúth féin;
2. Féach ar fhíséad a thaispeánann 3 nóiméad den chuiche duit (daithí ó imirt);
3. Air an leathanach céanna leis an bhfíséad tá 20 ceist le freagraí:

   (an aidhm atá anseo againn ná fáthacht an bhfuil na hábacht a roghnaimh intiúichte 
   & cé cheànch húsásta is atá sé iad a thuiscint)

4. Ión isteach ceistneoir eile chun do chuid túirímí faisí na guthanna a thabhairt duinn.

Beidh do chuid túirimí an-tábhachtach duinn agus aon ag pléidli bogearraí nuas dao phróiseas Gaeilge.

Cleachd a thús chun tuilleadh eolas a fháil as:

- Guthanna Sintéiseacha
- Treoracha don Cheistneoir
- An Físéad

Ba cheart go dtógfaidh sé tuirim is 20 nóiméad an ceistneoir seo a lionadh isteach. Má bhíonn aon cheist agaibh faisí aon ghné den obair seo ní gá a rith a sheasódh chun níos mó ná a rith chun níos mó.

Ge raibh mo thúil aithnteach!

Nessa Ní Chiardún

Taighdeoir,
An tSaotharbhlaith Leabharlanna & Foghlachta,
Coláiste na Triúide.

Rannóg 1: SONRAÍ PEARSANTA

Ainm Úsáideora: ____________
Seoladh Ríomhphoist: ____________
Inscne: Fineann Baineann
Aoisghrópa: 10-20 20-30 30-40 40-50 50-60 60+
Ceistneoir
Céim 2 as 5

Rannóg 2: SONRAÍ PEARSANTA (ar lean)

Ar tógadh sa Ghaeltacht tú?  Tógadh  Níor tógadh

- Má tógadh, cé acu ceann?  

- Munar tógadh, cén contae inar tógadh tú?  (Bolg Ailse Chlair)

Cén chanúint is mó a bhfuil tú ar do chompond léi?  (Ceistgh Chonnacht)

Ceistneoir
Céim 3 as 5

Rannóg 3: GUTHANNA SINTÉISEACHA

Blionn guthanna sintéiseacha le fáil go forleathan na laethanta seo
- cloiseann tú lad in ardaítheoir, in aerfort, in étáin agus úsáideas lad chun na teileafóin a fhreagraí i gcomhlachtal móra agus i mbainc, mar shampla.

Cad é do thuairim féin faoi ghuth sintéiseach?

<table>
<thead>
<tr>
<th>Is fuath liom é</th>
<th>Ceart go leor a' bhealaí liom go dté an guth sintéiseach</th>
<th>Is cuma liom go dté an guth sintéiseach</th>
<th>Brithim go bhfuil an guth sintéiseach go dté</th>
<th>Blionn go bhfuil an guth sintéiseach níos oiriúnach ná an guth daonna</th>
<th>Blionn go bhfuil an guth sintéiseach níos oiriúnach ná an guth daonna</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is fuath liom é</td>
<td>Ceart go leor a' bhealaí liom go dté an guth sintéiseach</td>
<td>Is cuma liom go dté an guth sintéiseach</td>
<td>Brithim go bhfuil an guth sintéiseach go dté</td>
<td>Blionn go bhfuil an guth sintéiseach níos oiriúnach ná an guth daonna</td>
<td>Blionn go bhfuil an guth sintéiseach níos oiriúnach ná an guth daonna</td>
</tr>
</tbody>
</table>

357
**B2: Teacher Test**

Teachers first viewed a 3-minute video of how Digichaint operates. They were then presented with 20 soundfiles in random order and asked to orthographically transcribe each and simultaneously rate the ease with which they could do so. Only 2 of the 20 are included in this screenshot.
B3: Sentences used in Teacher Evaluation

Connaught Voice

5 categories: 2 examples of each

Category 1: Reduction
1. Tá mé togha, go raibh maith agat
2. Tá, bhfuil fhios ad cá bhfuil Tom Bán?

Category 2: Long Vowels (4+ long vowel sounds)
3. Céard tá tú a rá?
4. Cén gró atá agatsa le déanamh liomsa?

Category 3: Short Vowels (4+ short vowel sounds)
5. Bhi sé ard, caol le gruaig dhubb agus culaithe bhán
6. Ní bhraithim go maith san áit seo

Category 4: Fricatives (Focal element of sentence have fricative)
7. Déanfadh mé pé rud is féidir liom, más sí do dhom é
8. Tiocfaidh an samhradh is fásfaidh an fear

Category 5: Stops
9. Ní doigh liom go bhfuil tada sa scéal ach piosa spraoi
10. Déan pé rud a cheapann tú féin

Ulster Voice

5 categories: 2 examples of each

Category 1: Reduction
11. Gabh mo leithscéal - bhfuil fhios agat cá bhfuil Tom Bán?
12. Caide dúirt tú faoin hbruscar?

Category 2: Long Vowels (4+ long vowel sounds)
13. Caide faoin oiche aréir?
14. Ó, cé hé féin?

Category 3: Short Vowels (4+ short vowel sounds)
15. An cara leat an freastalai isce?
16. An bhfaca mé tusa ag dul thart anseo aréir?

Category 4: Fricatives (Focal element of sentence have fricative)
17. B'hfhearr liom seasamh go fóill, má tá sé sin ceart go leor leatsa
18. Ar éigean go n-aithneoinn é dá siúiladh sé isteach an doras anois

Category 5: Stops (Focal element of sentence has stop)
19. An bhfuil aon chineál pictiúir de i do cheann agat?
20. Tá turas cagraithe duinn inniu

359
Translation of Teacher Test Sentences:

Connaught Voice

5 categories: 2 examples of each

Category 1: Reduction
1. I’m well, thank you
2. Yes, do you know where Tom Bán is?

Category 2: Long Vowels (4+ long vowel sounds)
3. What are you saying?
4. What business have you with me?

Category 3: Short Vowels (4+ short vowel sounds)
5. He was tall, thin with black hair and a white suit
6. I don’t feel well in this place

Category 4: Fricatives (Focal element of sentence have fricative)
7. I’ll do everything I can, if it’s worthwhile to me
8. The summer will come and the grass will grow

Category 5: Stops
9. It’s only a bit of fun - I don’t think there’s more to the story
10. Do whatever you think yourself

Ulster Voice

5 categories: 2 examples of each

Category 1: Reduction
11. Excuse me – do you know where Tom Bán is?
12. What did you say about the rubbish?

Category 2: Long Vowels (4+ long vowel sounds)
13. What about lastnight?
14. Oh, who’s he?

Category 3: Short Vowels (4+ short vowel sounds)
15. Is this waiter a friend of yours?
16. Did I see you around here lastnight?

Category 4: Fricatives (Focal element of sentence have fricative)
17. I would prefer to stand for the moment, if that’s ok with you
18. Hardly would I recognise him if he were to walk in the door now

Category 5: Stops (Focal element of sentence has stop)
19. Do you have any picture of him in your head?
20. There’s a trip organised for us today
B4: Teacher Post-Test Questionnaire
(Screenshot)

Ceistneoir
Céim 5 as 5

Rannóg 5: AISEOLAS

(1) An gceapann tú go mbeadh caint shintiúiseach ag an leibhéal seo oiriúnach do chluiche ar nds Digicheart?

<table>
<thead>
<tr>
<th>Ní bheadh in aon chor</th>
<th>B’thearr guth daonna ná guth síntiúiseach</th>
<th>Is cuma guth síntiúiseach nó guth daonna</th>
<th>Tá an guth síntiúiseach beagánín níos oiriúnach don chlúiche seo ná an guth daonna</th>
<th>Bheadh, cinnte</th>
</tr>
</thead>
</table>

(2) An dóigh leat go mbeadh guthanna mar seo tarraingteach d’fhoghlaimeoirí sinsearacha meánscoile?

1 2 3 4 5
Gan a bheith tarraingteach | An-tarraingteach

(3) Cad a cheapann tú de chaighdeán labhartha na Gaeilge ag ABAIR.IE?

1 2 3 4 5
An-lag | Ar fheabhas

(4) Breac slos sa bhosca thios, le do thoil, aon aiseolas a ritheann leat faoi na guthanna, faoin gcluiche, faoin gcoincheap go ginearlaithe, nó aon aon ní eile baíteach leis an dtriall seo:

(Tá do chuid tuairimí rithabhachtach domsa ag an stáid seo den taighde agus bheidh an-bhliain an-bhliain dift aon tuairimí/moltas a ritheann leat a chlo rithabhachtai.)
Appendix C

C1: Pupil Pre-Game Questionnaire

C1.1: Irish Language Version:

(Screenshot of Directions Given: this same text was presented for all 3 Platforms)

Réamh-cheistneoir
Céim 1 as 3

A dhalta,
Tádmid an-bhualach diot as páirt a ghlacadh sa taighde seo. Té tríd rud le déanamh:
(1) Ion isteach réamh-cheistneoir chun eolas comónta a thabhairt dún fúit féin;
(2) Imir an cliúche;
(3) Ión isteach ceistneoir eile chun do chuid tuairimí faoin gcílúiche (go hóríthe na graifíci agus na guthanna) a thabhairt dún.

Beidh do chuid tuairimí an-tábhachtach dún agus sim ag pleanáil bogearrái nu d'fhoghlaimeoirí Gaeltachta.

Cliceáil thíos chun tuilleadh eolaí a fháil ar:
- Guthanna Sínteseacha
- Treoracha don Réamh-cheistneoir
- An Cliúche

(Questionnaire Items:)

Rannóg 1: SONRAÍ PEARSANTA

1. Ainm Úsáideora: ______________

2. Inscne:

   Fireann       Baineann

3. Rang ar scoil:

   4ú bliain       5ú bliain       6ú bliain

4. An bhfuil tú ag freastal ar:

   Scoil Bhéarla      Gaelscoil       Scoil Ghaeltachta

362
Rannóg 2: FIÚNTAS AN CHLUICHE MAR ÁIS FHOGHLAMA

5. Cé chomh minic is a imrionn tú cluichí ar an ríomhaire?

| Gach lá | Ar a laghad ar bhonn seachtainiúil | Go hannamh | Ní imríim cluichí ríomhaire riamh |

Rannóg 3: ÁBHAILR SCOILE

6. Cén leibhéal tuisceana atá agat ar ghnáth-Ghaeilge labhartha, dar leat?

| Cúpla focal nuair a labhraitear go mall iad | Cúpla frása simplí nuair a labhraitear go mall iad | Piosai de chomhrá | Formhór na gcomhráite nuair a bhionn an chaingt soiléir | Beagnach gach comhrá le gnáth-luas cainte |

7. Cé acu Gnáthleibhéial nó Ardleibhéial Gaeilge a thóg tú sa Teastas Sóisearach?

   | Gnáthleibhéial | Ardleibhéial |

8. Cé acu Gnáthleibhéial nó Ardleibhéial Gaeilge a cheapann tú a thógfaidh tú don Ardteistiméireacht?

   | Gnáthleibhéial | Ardleibhéial |

9. Déan liosta de do rogha cúig ábhar a dhéanann tú ar scoil ag tosú leis an gceann is fearr leat:

   | An t-ábhar is fearr liom: |
   | 2ú ábhar is fearr liom: |
   | 3ú ábhar is fearr liom: |
   | 4ú ábhar is fearr liom: |
   | 5ú ábhar is fearr liom: |

Rannóg 4: GUTHANNA SINTÉISEACHA

10. Cad é do thuairim féin faoi ghuth sintéiseach?

   | Is fuath liom | Ceart go leor ach b’fhearr | Is cuma liom guth daonna nó guth | Braithim go mbíonn an guth | Bíonn guth sintéiseach níos oiriúnai |

363
<table>
<thead>
<tr>
<th>é</th>
<th>liom guth daonna</th>
<th>sintéiseach fad is go dtuigim é</th>
<th>sintéiseach oiriúnach uaireanta</th>
<th>ná guth daonna uaireanta</th>
</tr>
</thead>
</table>

Breac síos anseo, le do thoil, aon aiseolas eile a rítheann leat faoi aon ghné den cheistneoir seo:

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
</table>

**C1.2: English Language Version:**

(Screenshot of Directions Given: the text was the same for all 3 Platforms)

Dear pupil,

We are very grateful for your participating in this research project. Your overall task is comprised of three sections:

1. **(1)** fill in the Pre-Game Questionnaire to give us some general background information about yourself;
2. **(2)** play the Game;
3. **(3)** fill in the Post-Game Questionnaire giving us your opinions on the game (particularly on the graphics and synthesised voices).

Your opinions will be very important to us for the future development of software for learners of Irish.

Click on each of these links for further information on:

- Synthesised Voices
- Instructions for Pre-Game Questionnaire
- The Game

(Questionnaire Items:)

**Section 1: BACKGROUND INFORMATION**

1. Username: _____________

2. Gender:  
   [ ] Male  [ ] Female

3. Year in School:
4. Do you attend:

<table>
<thead>
<tr>
<th>4th year</th>
<th>5th year</th>
<th>6th year</th>
</tr>
</thead>
<tbody>
<tr>
<td>an English-medium school</td>
<td>Gaelscoil</td>
<td>Gaeltacht school</td>
</tr>
</tbody>
</table>

Section 2: COMPUTER GAMES

5. How often do you play games on the computer?

| Daily | At least weekly | Rarely | Never |

Section 3: SCHOOL SUBJECTS

6. How would you describe your general ability to understand spoken Irish?

| Only a few words spoken slowly | A few simple phrases spoken slowly | Parts of a conversation | Most conversations when spoken clearly | Almost all conversations at natural speaking speed |

7. Did you study Irish at ordinary level or at higher level for the Junior Certificate?

| Ordinary Level Irish | Higher Level Irish |

8. Do you expect to take ordinary level or higher level Irish for the Leaving Certificate?

| Ordinary Level Irish | Higher Level Irish |

9. What are your 'Top 5' favourite subjects in school?

<table>
<thead>
<tr>
<th>Favourite Subject:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd favourite subject:</td>
<td></td>
</tr>
<tr>
<td>3rd favourite subject:</td>
<td></td>
</tr>
<tr>
<td>4th favourite subject:</td>
<td></td>
</tr>
<tr>
<td>5th favourite subject:</td>
<td></td>
</tr>
</tbody>
</table>
Section 4: SYNTHESISED VOICES

10. What is your own opinion of synthesised voices?

| I hate them | A human voice is more suitable in all contexts | I have no preference as long as the voice is intelligible | Synthesised voices can be suitable in certain contexts | Synthesised voices are more attractive than human voices in certain contexts |

Please type in the box below any extra information you would like to include about any aspect of this questionnaire:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

366
C2: Pupil Post-Game Questionnaire: Digichaint

(Screenshot of Directions Given)
- Note: pupils were free to answer the questionnaires either through Irish or through English. The Irish language questionnaires are included here in Appendix C and the English language translations are included in Appendix E (with the results)

Ainm Úsáideora:

Breich sios, le do thoil, an chéad rud a ritheann leat faoin gcluiche seo, bíodh sé dearfach nó diúltach:


(Marcáil ar scála ó 1 go 5)

Rannóg 1: NA GRAFAICÍ

1. Léirigh do thuairim faoi na grafaicí a úsáideadh sa chluiche.

<table>
<thead>
<tr>
<th>An-lag</th>
<th>Lag</th>
<th>Réasúnta</th>
<th>Maith</th>
<th>An-mhaith</th>
</tr>
</thead>
</table>

2. Go teicniúil, ar bhráith tú go raibh an cluiche...
An-deacair le himirt | Deacair le himirt | Réasúnta | Éasca le himirt | An-éasca le himirt

Rannóg 2: FIÚNTAS AN CHLUICHE MAR ÁIS FHOGHLAMA

3. Phioc mé suas cúpla frása/focal/pointe gramadáil nua fad is a bhí mé ag imirt an cluiche.

| Easaontaím go hioimlán | Easaontaím | Neodrach | Aontaímid | Aontaím go hioimlán

4. Bhi an foclóir áisiúil mar chabhair le foghlaim na Gaeilge sa chluiche seo.

| Easaontaím go hioimlán | Easaontaím | Neodrach | Aontaímid | Aontaím go hioimlán

5. Léirigh do thuairim faoin gcluiche óirithe seo mar áis fhoghlaíma teanga:

| An-mhithaitneamhach | Mhithaitneamhach | Neodrach | Taitneamhach | An-taitneamhach

Rannóg 3: AN SCÉAL A ÚSÁIDEADH SA CHLUICHE


| Ní raibh in aon chor | Ní raibh | Neodrach | Measarthacht soiléir | Bhi an plota soiléir ón tús

7. An raibh an plota réadúil don chluiche seo?

| Ní raibh an plota réadúil in aon chor | Ní raibh an plota réadúil | Neodrach | Bhi an plota measarthacht réadúil

8. D’fhanas dírithe ar an gcluiche agus mé á imirt.

| Easaontaím go hioimlán | Easaontaím | Neodrach | Aontaímid | Aontaím go hioimlán

9. Bhíos níos mó dírithe ar phlota an chluiche ná mar a bhí ar struchtúr na teanga a bhí in úsáid.
10. Tá cothromaíocht mhaith idir spraiúlacht agus seanranna foghlama teanga sa chluiche seo.

<table>
<thead>
<tr>
<th>Easaontaím go hiomlán</th>
<th>Easaontaím</th>
<th>Neodrach</th>
<th>Aontaím</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

Rannóg 4: CAIGHDEÁN NA NGUTHANNA SINTÉISEACHA SA CHLUICHE

Ba mhaith linn do thuairim faoi chaighdeán na nguthanna sintéiseacha agus a n-oiriúntacht d’ás fhoghlama mar seo. Ba mhaith linn idirdhealú a dhéanamh idir na guthanna sintéiseacha agus dhá cheist cíle:
(a) leibhéal deacrachta na Gaeilge
(b) do thaithi féin le canúintí éagsúla

11. Ceapaim go bhfuil leibhéal deacrachta na Gaeilge oiriúnah domsai.

<table>
<thead>
<tr>
<th>Ní aontaím ar chor ar bith</th>
<th>Ní dóigh liom é</th>
<th>Neodrach</th>
<th>Aontaím a bheag nó a mhór</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

11.2 Má cheapann tú nach bhfuil leibhéal deacrachta na Gaeilge oiriúnah, an é go bhfuil sé...

<table>
<thead>
<tr>
<th>Ró-dheacair</th>
<th>Ró-éasca</th>
</tr>
</thead>
</table>

12. Tá na guthanna sintéiseacha sáchar soiléir chun an chaint a thuiscint.

<table>
<thead>
<tr>
<th>Ní aontaím in aon chor</th>
<th>Ní dóigh liom é</th>
<th>Neodrach</th>
<th>Aontaím a bheag nó a mhór</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

13. Ar bhraith tú deacracht leis na canúintí atá in úsáid sa chluiche?

<table>
<thead>
<tr>
<th>Deacrachtai móra leis na canúintí</th>
<th>Roinnt deacrachtai leis na canúintí</th>
<th>Neodrach</th>
<th>Gan móran deacrachtai leis na canúintí</th>
<th>Gan aon deacracht leis na canúintí</th>
</tr>
</thead>
</table>

369
14. Bhi sé chomh héasca céanna an guth sintéiseach a thuiscint sa chluiche is a bheadh sé le guth nádúrtha.

<table>
<thead>
<tr>
<th>Easaontaím go hiomlán</th>
<th>Easaontaím</th>
<th>Neodrach</th>
<th>Aontaím</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

15. Ceapaim go dtugann guthanna sintéiseacha atmaisféar níos fearr do chluichí riomhaireachta ná mar a dhéanann guthanna nádúrtha de ghnáth.

<table>
<thead>
<tr>
<th>Easaontaím go hiomlán</th>
<th>Easaontaím</th>
<th>Neodrach</th>
<th>Aontaím</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

16. Cheapas go raibh an guth sintéiseach oiriúnach don chluiche seo.

<table>
<thead>
<tr>
<th>Easaontaím go hiomlán</th>
<th>Easaontaím</th>
<th>Neodrach</th>
<th>Aontaím</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

**Rannóg 5: CLUICHI (GO GINEARÁLTA) MAR ÁIS FHOGHLAMA**

Nil sa chluiche a d’imir tú anois ach sampla amhain de chluiche idirghniomhach a úsáideann grafaíocht agus guthanna sintéiseacha. Sa rannóg seo, ba mhóir againn do chuid tuairimí faoi na ceisteanáta thios:

17.1 Cén fiúntas a bhaineann le cluiche idirghniomhach le guthanna sintéiseacha a chur ar fáil mar áis chun cleachtadh a dhéanann ar do chuid Gaeilge?

<table>
<thead>
<tr>
<th>Ni fiú faic é</th>
<th>Ni fiú mórán é</th>
<th>Neodrach</th>
<th>Tá fiúntas ag baint leis</th>
<th>Is fiú go mór é</th>
</tr>
</thead>
</table>

17.2 An bhfuil caighdeán na nguthanna sintéiseacha, mar atá faoi láthair, inghlactha don chomhthéacs ina bhfuil siad in úsáid sa chluiche seo?

<table>
<thead>
<tr>
<th>Nil an caighdeán maith go leor</th>
<th>Tá an caighdeán réasúnta iséal</th>
<th>Neodrach</th>
<th>Tá an caighdeán inghlactha</th>
<th>Tá an caighdeán inghlactha go hiomlán</th>
</tr>
</thead>
</table>

17.3 Cé chomh tarrainnteach is atá na guthanna sintéiseacha i gcomhthéacs cluiche mar seo?
18. Breac sios anseo, le do thoil, aon aiseolas cile a ritheann leat faoin gcluiche, faoi na guthanna, faoin gcóincheap go ginearálta, nó aon ní eile bainteach leis an dtriail seo:

<table>
<thead>
<tr>
<th>An-mhítharraingteach</th>
<th>Mítharraingteach</th>
<th>Neodrach</th>
<th>Tarraingteach</th>
<th>An-tarraingteach</th>
</tr>
</thead>
</table>

371
C3: Pupil Post-Game Questionnaire: Fáilte go TCD

Aim Úsáideora:

Breac síos, le do thoil, an chéad rud a ritheann leat faoin gcluiche seo, biodh sé dearfach nó diúltach:

(Marcáil ar scála ó 1 go 5)

Rannóg 1: NA GRAFAÍCÍ

1. Cad é do thuairim faoin gcluíra agus faoi na grafaicí sa bhfísicín seo?

<table>
<thead>
<tr>
<th>An-mhítharraingteach</th>
<th>Mítharraingteach</th>
<th>Neodrach</th>
<th>Tarraingteach</th>
<th>An-tarraingteach</th>
</tr>
</thead>
</table>

2. Cad é do thuairim faoi ghluaiseacht na gcarachtar agus mar a luíonn an ghluaiseacht leis an gcaint?

<table>
<thead>
<tr>
<th>An-dona</th>
<th>Dona</th>
<th>Neodrach</th>
<th>Maith</th>
<th>An-mhaith</th>
</tr>
</thead>
</table>

372
3. Cé chomh maith is a chuireann na graifí ci le hinchreidíúint agus le soiléireacht chaint na gcarachtar?

<table>
<thead>
<tr>
<th>An-dona</th>
<th>Dona</th>
<th>Neodrach</th>
<th>Maith</th>
<th>An-mhaith</th>
</tr>
</thead>
</table>

**Rannóg 2: FIÚNTAS AN CHLUICHE MAR ÁIS FHOGHLAMA**

4. Cé chomh cabhrach is a bheadh an saghas seo timpeallachta (na guthanna, na grafaíci agus an suiomh) i bhfoignimh na cluasthuisceana?

<table>
<thead>
<tr>
<th>Gan a bheith cabhrach in aon chor</th>
<th>Is beag an chabhair i</th>
<th>Neodrach</th>
<th>Cabhrach</th>
<th>An-chabhrach</th>
</tr>
</thead>
</table>

5. An mbainfeadh taitneamh as áis mar seo a úsáid agus tú ag fostaimh na Gaeilge, dá mbeadh teacht uirthi to héasca i do scoil?

<table>
<thead>
<tr>
<th>Ní bhaífinn, in aon chor</th>
<th>Ní dóighliom é</th>
<th>Neodrach</th>
<th>Bhainfinn</th>
<th>Bhainfinn go mór</th>
</tr>
</thead>
</table>

6. Cé chomh spreagúil is a cheapfa go mbeadh a leithéid seo d'áis?

<table>
<thead>
<tr>
<th>Gan a bheith spreagúil in aon chor</th>
<th>Gan a bheith spreagúil</th>
<th>Neodrach</th>
<th>Spreagúil</th>
<th>An-spreagúil</th>
</tr>
</thead>
</table>

7. An gceapann tú go ndéanfadh áis mar seo fostaimh na Gaeilge níos tarraingtí?

<table>
<thead>
<tr>
<th>Ní dhéanfadh in aon chor</th>
<th>Ní dúcha go ndéanfadh</th>
<th>Neodrach</th>
<th>Dhéanfadh</th>
<th>Dhéanfadh, cinnte</th>
</tr>
</thead>
</table>

**Rannóg 3: CAIGHDEÁN NA NGUTHANNA SINTÉISEACHA SA CHLUICHE**

Ba mhaith liom do thuairim faoi **caighdean na nguthanna sintéiseacha** agus a n-oiriúntacht d'áis fhoghlama mar seo. Ba mhaith liom idirdhealú a dhéanamh idir na guthanna sintéiseacha agus dhá cheist eile:

(a) leibhéal **deacraicthe** na Gaeilge
(b) do thaithi féin le **canúintí** éagsúla

373
8. Ceapaim go bhfuil leibhéil deacrachta na Gaeilge oiriúnach domsa.

<table>
<thead>
<tr>
<th>Ní aontaím ar chor ar bith</th>
<th>Ní dóigh liom é</th>
<th>Neodrac</th>
<th>Aontaím a bheag nó a mhóir</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

8.2 Má cheapann tú **nach** bhfuil leibhéil deacrachta na Gaeilge oiriúnach, an é go bhfuil sé...

<table>
<thead>
<tr>
<th>Ró-dheacair</th>
<th>Ró-časca</th>
</tr>
</thead>
</table>

9. Tá na guthanna sintéiseacha sáích soiléir chun an chaint a thuiscint.

<table>
<thead>
<tr>
<th>Ní aontaím in aon chor</th>
<th>Ní dóigh liom é</th>
<th>Neodrac</th>
<th>Aontaím a bheag nó a mhóir</th>
<th>Aontaím go hiomlán</th>
</tr>
</thead>
</table>

10. Ar bhrath tú deacracht leis na canúintí atá in úsáid in Taidhgín?

<table>
<thead>
<tr>
<th>Deacrachtaí móra leis na canúintí</th>
<th>Roinnt deacrachtaí leis na canúintí</th>
<th>Neodrac</th>
<th>Gan móran deacrachtaí leis na canúintí</th>
<th>Gan aon deacracht leis na canúintí</th>
</tr>
</thead>
</table>

Rannóg 4: **CLUICHÍ (GO GINEARÁLTA) MAR ÁIS FHOGHLAMA**

<table>
<thead>
<tr>
<th>Níl sa bhfíséan a léiríodh ach sampla amháin de chluiche a úsáideann grafaíocht agus guthanna sintéiseacha. Sa rannóg seo, ba mhóir againn do chuid tuairimí faoi na ceisteanna thions:</th>
</tr>
</thead>
</table>

11_1 Cén fiúntas a bhaineann le carachtar fiorúil idirghníomhach (*virtual conversational partner*) le guth sintéiseach a chur ar fáil mar áis chun cleachtadh a dhéanamh ar chomhhrá Gaeilge?

<table>
<thead>
<tr>
<th>Ní fiú faic é</th>
<th>Ní fiú móran é</th>
<th>Neodrac</th>
<th>Tá fiúntas ag baint leis</th>
<th>Is fiú go móir é</th>
</tr>
</thead>
</table>

11_2 An bhfuil **caighdeán** na nguthanna sintéiseacha, mar atá faoi láthair, inghlactha don chomhthéacs ina bhfuil siad in úsáid sa chluiche seo?

<table>
<thead>
<tr>
<th>Níl an</th>
<th>Tá an</th>
<th>Tá an caighdeán</th>
</tr>
</thead>
</table>
11.3 Cé chomh **tarraingteach** is atá na guthanna sintéiseacha i gcomhthéacs cluiche mar seo?

<table>
<thead>
<tr>
<th>An-mhítharraingteach</th>
<th>Mítharraingteach</th>
<th>Neodrach</th>
<th>Tarraingteach</th>
<th>An-tarraingteach</th>
</tr>
</thead>
</table>

12. Breac síos anseo, le do thoil, aon aiseolas eile a ritheann leat faoin gcluiche, faoi na guthanna, faoin gcoincheap go ginearálta, nó aon ní eile bainteach leis an dtriail seo:
C4: Pupil Post-Game Questionnaire: Taidhgin

Ceistneoir faoin gCiuiche
Céim 3 as 3

Questionnaire in English

Líon isteach, le do thoil, an lár-cheistneoir seo chun do chuid tuairimí faoi áis mar Taidhgn a chur in iúl.

Is spéis líon do chuid tuairimí thor ceithre rannóg:
- na graíficí atá in úsáid;
- an mhaithneas a bhaineann le cluiche cosúil leis an gcéann seo;
- na guthanna sintéiseacha;
- cluichí mar áis fhoghlama.

Úsáideann an t-eolas seo chun tuilleadh forbartha agus taighde a dhéanamh ar ghuthanna sintéiseacha agus ar cluichí idirghníomhacha don Shaoilge.

Go raibh mile maith agaibh!

Ainm Úsáideora:

Breac síos, le do thoil, an chéad rud a ritheann leal faoin gcluiche seo, bíodh sé dearfach nó diúltach:


(Marcáil ar scála ó 1 go 5)

Rannóg 1: NA GRAFAICÍ

1. An mbaireann tú go bhfuil na graifící (an moncaí) tarraingteach?

<table>
<thead>
<tr>
<th>An-mhítharraingteach</th>
<th>Mítharraingteach</th>
<th>Neodrách</th>
<th>Tarraingteach</th>
<th>An-tarraingteach</th>
</tr>
</thead>
</table>

2. An gcuireann an moncaí le spraifúlacht an chluiche?

<table>
<thead>
<tr>
<th>Ní chuireann in aon chor</th>
<th>Ní dóigh liom é</th>
<th>Neodrách</th>
<th>Cuirann</th>
<th>Cuirann go mór</th>
</tr>
</thead>
</table>

376
3. Cad a cheapann tú den tslí a luionn gluaiseachtaí an mhoncai leis an gcaint?

<table>
<thead>
<tr>
<th>An-dona</th>
<th>Dona</th>
<th>Neodrach</th>
<th>Maith</th>
<th>An-mhaith</th>
</tr>
</thead>
</table>

Rannóg 2: FIÚNTAS AN CHLUICHE MAR ÁIS FHOGLLAMA

4. Cé chomh cabhrach is a bheadh an saghas seo aise (i.e. an idirghníomhaíocht agus an spraiúlacht) i gcleachtadh comhrá Gaeilge?

<table>
<thead>
<tr>
<th>Gan a bheith cabhrach in aon chor</th>
<th>Is beag an chabháir í</th>
<th>Neodrach</th>
<th>Cabhrach</th>
<th>An-chabhrach</th>
</tr>
</thead>
</table>

5. An mbainfeá úsáid as áis mar seo chun do chuid Gaeilge a chleachtadh dá mbeadh teacht uirthi go héasca i do scoil?

<table>
<thead>
<tr>
<th>Ní bhainfinn riamh</th>
<th>Ní bhainfinn mórán</th>
<th>Neodrach</th>
<th>Bhainfinn ó am go chéile</th>
<th>Bhainfinn go rialta</th>
</tr>
</thead>
</table>

6. Cé chomh spréagúil is a bheadh áis mar seo, dar leat?

<table>
<thead>
<tr>
<th>Gan a bheith spréagúil in aon chor</th>
<th>Gan a bheith spréagúil</th>
<th>Neodrach</th>
<th>Spréagúil</th>
<th>An-spréagúil</th>
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</thead>
</table>

7. An gceapann tú go ndéanfadh áis mar Taidhgín foghlaim na Gaeilge nios tarraingtí?

<table>
<thead>
<tr>
<th>Ní dhéanfadh in aon chor</th>
<th>Ní dócha go ndéanfadh</th>
<th>Neodrach</th>
<th>Dhéanfadh</th>
<th>Dhéanfadh, cinnte</th>
</tr>
</thead>
</table>

Rannóg 3: CAIGHDEÁN NA NGUTHANNA SINTÉISEACHA SA CHLUICHE

Ba mhaith linn do thuairim faoi chaighdeán na nguthanna sintéiseacha agus a n-oiriúntacht d'áis fhoghlama mar Taidhgin. Ba mhaith linn idirdhealú a dhéanamh idir na guthanna sintéiseacha agus dhá cheist cíle:

(a) leibhéal deacrachta na Gaeilge (na focail/frásaí a d'úsáid Taidhgin)
(b) taithí na ndaltaí le canúintí éagsúla

8. Ceapaim go bhfuil leibhéal deacrachta na Gaeilge oiriúnach domsa

377
<table>
<thead>
<tr>
<th>Ní aontaímid in aon chor</th>
<th>Ní dóigh liom é</th>
<th>Neodrach</th>
<th>Aontaímid a bheag nó a mhór</th>
<th>Aontaímid go hiomlán</th>
</tr>
</thead>
</table>

a. Má cheapann tú **nach** bhfuil leibhéal deacrachta na Gaeilge oiriúnach, an é go bhfuil sé...

<table>
<thead>
<tr>
<th>Ró-dheacair</th>
<th>Ró-éasca</th>
</tr>
</thead>
</table>

9. Tá na guthanna sintéiseacha sáchar soiléir chun an chaint a thuiscint

<table>
<thead>
<tr>
<th>Ní aontaímid in aon chor</th>
<th>Ní dóigh liom é</th>
<th>Neodrach</th>
<th>Aontaímid a bheag nó a mhór</th>
<th>Aontaímid go hiomlán</th>
</tr>
</thead>
</table>

10. Ar bharr thá dh leacracht leis na canuinté átá in úsáid in Taidhgin?

<table>
<thead>
<tr>
<th>Tá siad ag cruthú deacrachtaí móra</th>
<th>Tá siad ag cruthú roinnt deacrachtaí</th>
<th>Neodrach</th>
<th>Níl siad ag cruthú mórán deacrachtaí</th>
<th>Níl siad ag cruthú aon deacrachtaí</th>
</tr>
</thead>
</table>

Rannóg 4: **CLUICHÍ (GO GINEARÁLTA) MAR ÁIS FHOGHLAMA**

Níl sa mhéid a léiriodh ach sampla amháin de chainteoir florúil a úsáideann guth sintéiseach. Sa rannóg seo, ba mhóir againn do chuid tuairimh faoi na ceisteanna thlós:

11.1 Cén **fiúntas** a bhaineann le carachtar florúil idirghníomhach (virtual conversational partner) le guth sintéiseach a chur ar fáil mar ais chun cleachtadh a dhéanamh ar chomhrá Gaeilge?

<table>
<thead>
<tr>
<th>Ní fiú faic é</th>
<th>Ní fiú mórán é</th>
<th>Neodrach</th>
<th>Tá fiúntas ag baint leis</th>
<th>Is fiú go móir é</th>
</tr>
</thead>
</table>

11.2 An bhfuil **caighdeán** na nguthanna sintéiseacha, mar ata faoi láthair, inghlactha don chomhthéacs ina bhfuil siad in úsáid in Taidhgin?

<table>
<thead>
<tr>
<th>Níl an caighdeán maith go leor</th>
<th>Tá an caighdeán réasúnta iséal</th>
<th>Neodrach</th>
<th>Tá an caighdeán inghlactha</th>
<th>Tá an caighdeán inghlactha go hiomlán</th>
</tr>
</thead>
</table>

378
11.3 Cé chomh tarraingteach is atá na guthanna sintéiscacha i gcomhthéacs cluiche mar seo?

<table>
<thead>
<tr>
<th>An-mhitharraingteach</th>
<th>Mitharraingteach</th>
<th>Neodrach</th>
<th>Tarraingteach</th>
<th>An-tarraingteach</th>
</tr>
</thead>
</table>

12. Breac sios anseo, le do thoil, aon aiseolas eile a ritheann leat faoin gcluiche, faoi na guthanna, faoin gcóincheap go ginearálta, nó aon ní cile bainteach leis an dtriail seo:

________________________________________________________________________

________________________________________________________________________
Appendix D

**D1: Teacher Evaluation Results**

<table>
<thead>
<tr>
<th>Sentences</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 11 12</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 2 11 12</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 2 11 12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*CM = Connemara sentences
**GD = Gaod Dobhair sentences

The top section of the table deals with the qualitative data and gives the mean, median and mode of the opinion scores for each sentence, as scored by each of the 31 respondents. The bottom section of the same table gives the
corresponding quantitative data, in accordance with the criteria devised for marking the transcriptions (Chapter 4.3.3.1.1: Criteria for marking responses to 'intelligibility' test).
**D2: Calculation of Intelligibility and Clarity Index**

Calculating an Intelligibility and Clarity Index for Connaught dialect: application of formula, as presented in Chapter 4.3.3.2 of the thesis

<table>
<thead>
<tr>
<th>Person</th>
<th>Performance (mean score)</th>
<th>Opinion (mean score)</th>
<th>5 - P</th>
<th>5 - O</th>
<th>(5 - P) + (5 - O)</th>
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<tr>
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**SUM:** 53.5

**DIVIDE BY 62:** 0.862903226

**Connaught Clarity Index:** 4.137096774
Calculating an Intelligibility and Clarity Index for Ulster dialect: application of formula, as presented in Chapter 4.3.3.2 of the thesis

<table>
<thead>
<tr>
<th>Person</th>
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<tr>
<td>30</td>
<td>4.9</td>
<td>3.5</td>
<td>0.1</td>
<td>1.5</td>
<td>1.6</td>
</tr>
<tr>
<td>31</td>
<td>4.8</td>
<td>3.2</td>
<td>0.2</td>
<td>1.8</td>
<td>2</td>
</tr>
</tbody>
</table>

**SUM:** 84.9

**DIVIDE BY 62:** 1.369354839

(5 - 1.3693)

**FINAL ANSWER**

Ulster Clarity Index: 3.630645161
### Appendix E

Note: Pupils could respond either in Irish or in English for each of the 3 platforms. The text of the Irish questionnaire items is in Appendix C (without results) and the translation (the English questionnaire items) is included here (with results).

#### E1: Post-Game Questionnaire Results (Descriptive Results): Digichaint

<table>
<thead>
<tr>
<th>Item</th>
<th>Digichaint: Total number of participants</th>
<th>Digichaint</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rate the graphics used in this game on the scale below:</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Very poor</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Reasonable</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>Very good</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>Did you feel that the game was technically...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very difficult to play</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Difficult to play</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Reasonable</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Easy to play</td>
<td>128</td>
</tr>
<tr>
<td></td>
<td>Very easy to play</td>
<td>63</td>
</tr>
<tr>
<td>3</td>
<td>I learned some new phrases/words/grammar points as I played the game</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completely disagree</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>127</td>
</tr>
<tr>
<td></td>
<td>Agree completely</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>The dictionary is helpful as an aid to learning Irish in this game.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completely disagree</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>138</td>
</tr>
<tr>
<td></td>
<td>Agree completely</td>
<td>61</td>
</tr>
</tbody>
</table>
5 | Rate your overall enjoyment of this particular game as a language learning experience.  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Very unenjoyable</td>
<td>1</td>
<td>0.4%</td>
</tr>
<tr>
<td>Unenjoyable</td>
<td>20</td>
<td>8%</td>
</tr>
<tr>
<td>Neutral</td>
<td>56</td>
<td>22.4%</td>
</tr>
<tr>
<td>Enjoyable</td>
<td>133</td>
<td>53.2%</td>
</tr>
<tr>
<td>Very enjoyable</td>
<td>40</td>
<td>16%</td>
</tr>
</tbody>
</table>

6 | The plot of this game was clear to me from the outset.  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>5</td>
<td>2%</td>
</tr>
<tr>
<td>Disagree</td>
<td>31</td>
<td>12.4%</td>
</tr>
<tr>
<td>Neutral</td>
<td>22</td>
<td>8.8%</td>
</tr>
<tr>
<td>Agree</td>
<td>112</td>
<td>44.8%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>80</td>
<td>32%</td>
</tr>
</tbody>
</table>

7 | Was the plot credible for this type of game?  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely not credible</td>
<td>3</td>
<td>1.2%</td>
</tr>
<tr>
<td>Probably not credible</td>
<td>26</td>
<td>10.4%</td>
</tr>
<tr>
<td>Neutral</td>
<td>52</td>
<td>20.8%</td>
</tr>
<tr>
<td>Reasonably credible</td>
<td>123</td>
<td>49.2%</td>
</tr>
<tr>
<td>The plot was credible</td>
<td>46</td>
<td>18.4%</td>
</tr>
</tbody>
</table>

8 | The game held my attention.                  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>5</td>
<td>2%</td>
</tr>
<tr>
<td>Disagree</td>
<td>37</td>
<td>14.8%</td>
</tr>
<tr>
<td>Neutral</td>
<td>43</td>
<td>17.2%</td>
</tr>
<tr>
<td>Agree</td>
<td>130</td>
<td>52%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>35</td>
<td>14%</td>
</tr>
</tbody>
</table>

9 | I was more focused on the plot of the game than I was on the language being used.  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>5</td>
<td>2%</td>
</tr>
<tr>
<td>Disagree</td>
<td>59</td>
<td>23.6%</td>
</tr>
<tr>
<td>Neutral</td>
<td>52</td>
<td>20.8%</td>
</tr>
<tr>
<td>Agree</td>
<td>113</td>
<td>45.2%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>21</td>
<td>8.4%</td>
</tr>
</tbody>
</table>
10. There is a good balance between enjoyment and language learning in this game.

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>2</td>
<td>0.8%</td>
</tr>
<tr>
<td>Disagree</td>
<td>16</td>
<td>6.4%</td>
</tr>
<tr>
<td>Neutral</td>
<td>45</td>
<td>18%</td>
</tr>
<tr>
<td>Agree</td>
<td>153</td>
<td>61.2%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>34</td>
<td>13.6%</td>
</tr>
</tbody>
</table>

11. The overall standard of the Irish used in this game is at about the right level for me.

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>4</td>
<td>1.6%</td>
</tr>
<tr>
<td>Disagree</td>
<td>40</td>
<td>16%</td>
</tr>
<tr>
<td>Neutral</td>
<td>30</td>
<td>12%</td>
</tr>
<tr>
<td>Agree</td>
<td>130</td>
<td>52%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>46</td>
<td>18.4%</td>
</tr>
</tbody>
</table>

11a. If you feel the Irish used is not at the right level, is this because it was...

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too difficult</td>
<td>54</td>
<td>48.6%</td>
</tr>
<tr>
<td>Too easy</td>
<td>57</td>
<td>51.4%</td>
</tr>
</tbody>
</table>

12. The synthesised voices were sufficiently clear to make the speech intelligible.

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>14</td>
<td>5.6%</td>
</tr>
<tr>
<td>Disagree</td>
<td>55</td>
<td>22%</td>
</tr>
<tr>
<td>Neutral</td>
<td>42</td>
<td>16.8%</td>
</tr>
<tr>
<td>Agree</td>
<td>115</td>
<td>46%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>24</td>
<td>9.6%</td>
</tr>
</tbody>
</table>

13. Did you experience particular difficulties with the dialects that are used in *Digichaint*?

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely some difficulty</td>
<td>1</td>
<td>0.4%</td>
</tr>
<tr>
<td>Probably some difficulty</td>
<td>75</td>
<td>30%</td>
</tr>
<tr>
<td>Neutral</td>
<td>44</td>
<td>17.6%</td>
</tr>
<tr>
<td>Probably no difficulty</td>
<td>107</td>
<td>42.8%</td>
</tr>
<tr>
<td>Definitely no difficulty</td>
<td>23</td>
<td>9.2%</td>
</tr>
</tbody>
</table>
14. I found it no more difficult to understand the computer-generated voice than I would if natural voices were used.

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>6 (2.4%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>78 (31.2%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>43 (17.2%)</td>
</tr>
<tr>
<td>Agree</td>
<td>96 (38.4%)</td>
</tr>
<tr>
<td>Agree completely</td>
<td>27 (10.8%)</td>
</tr>
</tbody>
</table>

15. In general, I think that computer-generated voices give a better atmosphere to computer games than natural voices do.

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>17 (6.8%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>84 (33.6%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>56 (22.4%)</td>
</tr>
<tr>
<td>Agree</td>
<td>73 (29.2%)</td>
</tr>
<tr>
<td>Agree completely</td>
<td>20 (8%)</td>
</tr>
</tbody>
</table>

16. I found the computer-generated voice suitable for this computer game.

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>5 (2%)</td>
</tr>
<tr>
<td>Disagree</td>
<td>32 (12.8%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>54 (21.6%)</td>
</tr>
<tr>
<td>Agree</td>
<td>142 (56.8%)</td>
</tr>
<tr>
<td>Agree completely</td>
<td>17 (6.8%)</td>
</tr>
</tbody>
</table>

17.1 Give your opinion on...:

...the usefulness of the concept of producing an interactive language learning game in order to practise Irish:

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of little or no use</td>
<td>1 (0.4%)</td>
</tr>
<tr>
<td>Not particularly useful</td>
<td>10 (4%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>36 (14.4%)</td>
</tr>
<tr>
<td>Useful</td>
<td>135 (54%)</td>
</tr>
<tr>
<td>Very useful</td>
<td>68 (27.2%)</td>
</tr>
</tbody>
</table>

17.2 Give your opinion on...:

...the quality of the synthesised voices: to what extent do you think the voices are adequate for the type of game presented here?

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely inadequate</td>
<td>3 (1.2%)</td>
</tr>
<tr>
<td>Inadequate</td>
<td>49 (19.6%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>44 (17.6%)</td>
</tr>
<tr>
<td>Adequate</td>
<td>134 (53.6%)</td>
</tr>
<tr>
<td>Totally adequate</td>
<td>20 (8%)</td>
</tr>
</tbody>
</table>
17_3 ...the *attractiveness* of the voices:

<table>
<thead>
<tr>
<th>Attractiveness</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very unattractive</td>
<td>12 4.8%</td>
</tr>
<tr>
<td>Unattractive</td>
<td>75 30%</td>
</tr>
<tr>
<td>Neutral</td>
<td>58 23.2%</td>
</tr>
<tr>
<td>Attractive</td>
<td>92 36.8%</td>
</tr>
<tr>
<td>Very attractive</td>
<td>13 5.2%</td>
</tr>
</tbody>
</table>
### E2: Post-Game Questionnaire Results (Descriptive Results): Fáilte go TCD

<table>
<thead>
<tr>
<th>Item</th>
<th>Fáilte go TCD: Total number of participants</th>
<th>Fáilte go TCD</th>
<th>Num.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How would you describe your judgment of the background setting and the graphics in the video?</td>
<td>252</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very unattractive</td>
<td>7</td>
<td>2.8%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unattractive</td>
<td>51</td>
<td>20.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>39</td>
<td>15.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attractive</td>
<td>122</td>
<td>48.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very attractive</td>
<td>33</td>
<td>13.1%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>How would you describe your judgment of the body movements of the figures and their alignment to speech?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very badly aligned</td>
<td>6</td>
<td>2.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Badly aligned</td>
<td>43</td>
<td>17.1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acceptable</td>
<td>66</td>
<td>26.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Well aligned</td>
<td>120</td>
<td>47.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very well aligned</td>
<td>17</td>
<td>6.7%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>To what extent do the movements of the characters add credibility and clarity to the conversational exchanges?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very little credibility &amp; clarity</td>
<td>8</td>
<td>3.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low credibility &amp; clarity</td>
<td>53</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>62</td>
<td>24.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Credible &amp; clear</td>
<td>118</td>
<td>46.8%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very great credibility &amp; clarity</td>
<td>11</td>
<td>4.4%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>To what extent do you think this type of learning platform (the voices, the graphics and the setting) would help in practising listening comprehension?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all helpful</td>
<td>6</td>
<td>2.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not helpful</td>
<td>33</td>
<td>13.1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>38</td>
<td>15.1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Helpful</td>
<td>114</td>
<td>45.2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very helpful</td>
<td>61</td>
<td>24.2%</td>
<td></td>
</tr>
</tbody>
</table>
5 Would you enjoy using this type of activity to develop your aural Irish skills, should it be available and easily accessible in your school?

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely not</td>
<td>7</td>
<td>2.8%</td>
</tr>
<tr>
<td>Probably not</td>
<td>24</td>
<td>9.5%</td>
</tr>
<tr>
<td>Neutral</td>
<td>31</td>
<td>12.3%</td>
</tr>
<tr>
<td>Probably</td>
<td>122</td>
<td>48.4%</td>
</tr>
<tr>
<td>Definitely</td>
<td>68</td>
<td>27%</td>
</tr>
</tbody>
</table>

6 How motivating do you find this type of activity?

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all motivating</td>
<td>5</td>
<td>2%</td>
</tr>
<tr>
<td>Not particularly motivating</td>
<td>41</td>
<td>16.3%</td>
</tr>
<tr>
<td>Neutral</td>
<td>46</td>
<td>18.2%</td>
</tr>
<tr>
<td>Motivating</td>
<td>134</td>
<td>53.2%</td>
</tr>
<tr>
<td>Very motivating</td>
<td>26</td>
<td>10.3%</td>
</tr>
</tbody>
</table>

7 Do you think this type of activity would make the learning of Irish more attractive?

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely not</td>
<td>3</td>
<td>1.2%</td>
</tr>
<tr>
<td>Probably not</td>
<td>20</td>
<td>8%</td>
</tr>
<tr>
<td>Neutral</td>
<td>34</td>
<td>13.5%</td>
</tr>
<tr>
<td>Probably</td>
<td>139</td>
<td>55.1%</td>
</tr>
<tr>
<td>Definitely</td>
<td>56</td>
<td>22.2%</td>
</tr>
</tbody>
</table>

8 The overall standard of the Irish used is at about the right level for me.

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>4</td>
<td>1.6%</td>
</tr>
<tr>
<td>Disagree</td>
<td>38</td>
<td>15.1%</td>
</tr>
<tr>
<td>Neutral</td>
<td>33</td>
<td>13.1%</td>
</tr>
<tr>
<td>Agree</td>
<td>139</td>
<td>55.1%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>38</td>
<td>15.1%</td>
</tr>
</tbody>
</table>

8.1 If you feel the Irish used is not at the right level, is this because it was...

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too difficult</td>
<td>34</td>
<td>31%</td>
</tr>
<tr>
<td>Too easy</td>
<td>76</td>
<td>69%</td>
</tr>
</tbody>
</table>

9 The synthesised voices were sufficiently clear to make the speech intelligible.

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely disagree</td>
<td>15</td>
<td>5.9%</td>
</tr>
<tr>
<td>Disagree</td>
<td>74</td>
<td>29.4%</td>
</tr>
<tr>
<td>Neutral</td>
<td>51</td>
<td>20.2%</td>
</tr>
<tr>
<td>Agree</td>
<td>103</td>
<td>40.9%</td>
</tr>
<tr>
<td>Agree completely</td>
<td>9</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

10 Did you experience particular difficulties with the dialects that are used in the video?

| Definitely some difficulty | 22 | 8.7% |
| Probably some difficulty | 71 | 28.2% |
| Neutral | 33 | 13.1% |
| Probably no difficulty | 107 | 42.5% |
| Definitely no difficulty | 19 | 7.5% |

11_1 Please give your opinion on:
...the **usefulness** of producing graphics with synthesised voices in order to practise aural comprehension.

| Of little or no use | 4 | 1.6% |
| Not particularly useful | 24 | 9.5% |
| Neutral | 26 | 10.3% |
| Useful | 151 | 60% |
| Very useful | 47 | 18.6% |

11_2 ...the **quality** of the synthesised voices: to what extent do you think the voices are adequate for the type of learning platform presented here?

| Completely inadequate | 6 | 2.4% |
| Inadequate | 64 | 25.4% |
| Neutral | 54 | 21.4% |
| Adequate | 121 | 48% |
| Totally adequate | 7 | 2.8% |

11_3 ...the **attractiveness** of the voices:

| Very unattractive | 15 | 6% |
| Unattractive | 80 | 31.7% |
| Neutral | 62 | 24.6% |
| Attractive | 88 | 34.9% |
| Very attractive | 7 | 2.8% |
### E3: Post-Game Questionnaire Results (Descriptive Results): Taidhgin

<table>
<thead>
<tr>
<th>Item</th>
<th>Taidhgin Total number of participants</th>
<th>Taidhgin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>228</td>
</tr>
<tr>
<td>1</td>
<td>Do you feel the graphic display (the talking monkey) is suitable for this type of game/activity?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Num.</strong></td>
<td><strong>%</strong></td>
</tr>
<tr>
<td></td>
<td>Definitely not suitable</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not really suitable</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Quite suitable</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Very suitable</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Do you feel the talking monkey adds to the overall playfulness of the exercise?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Num.</strong></td>
<td><strong>%</strong></td>
</tr>
<tr>
<td></td>
<td>Definitely not</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Probably not</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Probably does</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Definitely does</td>
<td>110</td>
</tr>
<tr>
<td>3</td>
<td>How would you describe the movements of the talking monkey and their alignment to speech?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Num.</strong></td>
<td><strong>%</strong></td>
</tr>
<tr>
<td></td>
<td>Very badly aligned</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Badly aligned</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Acceptable</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Well aligned</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Very well aligned</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>To what extent do you think this type of learning platform (i.e. the interaction and playfulness) would help in practising conversational Irish?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Num.</strong></td>
<td><strong>%</strong></td>
</tr>
<tr>
<td></td>
<td>Not at all helpful</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Not helpful</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Helpful</td>
<td>116</td>
</tr>
<tr>
<td></td>
<td>Very helpful</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>Would you use a virtual conversation partner (like the talking monkey) should it be available and easily accessible in your school?</td>
<td></td>
</tr>
<tr>
<td>Definitely not</td>
<td>5</td>
<td>2.2%</td>
</tr>
<tr>
<td>----------------</td>
<td>----</td>
<td>------</td>
</tr>
<tr>
<td>Probably not</td>
<td>20</td>
<td>8.8%</td>
</tr>
<tr>
<td>Neutral</td>
<td>22</td>
<td>9.6%</td>
</tr>
<tr>
<td>Probably</td>
<td>104</td>
<td>45.6%</td>
</tr>
<tr>
<td>Definitely</td>
<td>77</td>
<td>33.8%</td>
</tr>
</tbody>
</table>

6. To what extent would you be motivated by this type of activity?

| Not at all motivated | 3 | 1.3% |
| Not particularly motivated | 12 | 5.3% |
| Neutral | 26 | 11.4% |
| Motivated | 129 | 56.6% |
| Very motivated | 58 | 25.4% |

7. Do you think a virtual conversation partner such as Taidhgin would make the learning of Irish more attractive?

| Definitely not | 1 | 0.4% |
| Probably not   | 7 | 3.1% |
| Neutral        | 20 | 8.8% |
| Probably       | 111 | 48.7% |
| Definitely     | 89 | 39% |

8. The overall standard of the Irish used by Taidhgin is at about the right level for me.

| Completely disagree | 10 | 4.4% |
| Disagree | 32 | 14% |
| Neutral | 33 | 14.5% |
| Agree | 105 | 46% |
| Agree completely | 48 | 21.1% |

8.1 If you feel the Irish used is not at the right level, is this because it was...

| Too difficult | 20 | 21% |
| Too easy | 75 | 79% |

9. The synthesised voices were sufficiently clear to make the speech intelligible.

| Completely disagree | 2 | 0.9% |
| Disagree | 31 | 13.6% |

393
<table>
<thead>
<tr>
<th></th>
<th>Neutral</th>
<th>Agree</th>
<th>Agree completely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>29</td>
<td>124</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>12.7%</td>
<td>54.4%</td>
<td>18.4%</td>
</tr>
</tbody>
</table>

10 Did you experience particular difficulties with the dialects that are used in Taidhgm?

<table>
<thead>
<tr>
<th></th>
<th>Definitely some difficulty</th>
<th>Probably some difficulty</th>
<th>Neutral</th>
<th>Probably no difficulty</th>
<th>Definitely no difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>39</td>
<td>31</td>
<td>109</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>1.8%</td>
<td>17.1%</td>
<td>13.6%</td>
<td>47.8%</td>
<td>19.7%</td>
</tr>
</tbody>
</table>

Please give your opinion on:

11_1 the usefulness of the concept of producing a virtual conversation partner who speaks with a synthesised voice in order to practise oral Irish:

<table>
<thead>
<tr>
<th></th>
<th>Of little or no use</th>
<th>Not particularly useful</th>
<th>Neutral</th>
<th>Useful</th>
<th>Very useful</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>7</td>
<td>31</td>
<td>110</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>0.9%</td>
<td>3.1%</td>
<td>13.6%</td>
<td>48.2%</td>
<td>34.2%</td>
</tr>
</tbody>
</table>

11_2 the quality of the synthesised voices: to what extent do you think the voices are adequate for the type of learning platform presented here?

<table>
<thead>
<tr>
<th></th>
<th>Completely inadequate</th>
<th>Inadequate</th>
<th>Neutral</th>
<th>Adequate</th>
<th>Totally adequate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>27</td>
<td>29</td>
<td>144</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>2.2%</td>
<td>11.8%</td>
<td>12.7%</td>
<td>63.2%</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

11_3 the attractiveness of the voices:

<table>
<thead>
<tr>
<th></th>
<th>Very unattractive</th>
<th>Unattractive</th>
<th>Neutral</th>
<th>Attractive</th>
<th>Very attractive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>45</td>
<td>48</td>
<td>106</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>2.2%</td>
<td>19.7%</td>
<td>21%</td>
<td>46.5%</td>
<td>10.6%</td>
</tr>
</tbody>
</table>
Appendix F

F1: Kruskal-Wallis Test Results: Digichaint

Expansion of Kruskal-Wallis Test for items showing significance in Table 5.9, Chapter 5. These expansions show the mean rank scores and the direction of the differences. They also give the post hoc analysis showing where the difference lies.

**Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>182</td>
<td>131.96</td>
</tr>
<tr>
<td>Male</td>
<td>68</td>
<td>108.21</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 1:**

\[ H(1)=6.120, p=0.013 * \]

**Between-School Differences**

**Item 1: Rate the graphics used in this game on a scale of 1 - 5**

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>103.57</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>99.02</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>143.83</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>Item 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>23.133</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Asymp.</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Gender
Kruskal-Wallis Test Statistics for Item 1:

\[ H(2)=23.133, \ p=0.000 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 1:

- Gaeltacht x Gaelscoil: \( H(1)=0.099, \ p=0.753 \)
- Gaeltacht x English: \( H(1)=18.906, \ p=0.000 \)
- Gaelscoil x English: \( H(1)=9.499, \ p=0.002 \)

Item 3: I learned some new phrases/words/grammar points as I played through the game.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>105.59</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>87.44</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>144.66</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 3:

\[ H(2)=27.139, \ p=0.000 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 3:

- Gaeltacht x Gaelscoil: \( H(1)=2.207, \ p=0.137 \)
- Gaeltacht x English: \( H(1)=19.109, \ p=0.000 \)
- Gaelscoil x English: \( H(1)=14.138, \ p=0.000 \)

Item 4: The dictionary is helpful as an aid to learning Irish in this game.
<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>98.22</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>116.72</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>143.96</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 4:**

\[ H(2) = 26.624, \ p = 0.000 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 4:**

Gaeltacht x Gaelscoil: \( H(1) = 1.184, \ p = 0.276 \)
Gaeltacht x English: \( H(1) = 19.109, \ p = 0.000 \)
Gaelscoil x English: \( H(1) = 3.348, \ p = 0.067 \)

**Item 5:** Rate your overall enjoyment of this particular game as a language learning experience.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>115.52</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>68.36</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>141.95</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 5:**

\[ H(2) = 29.324, \ p = 0.000 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 5:**

Gaeltacht x Gaelscoil: \( H(1) = 12.337, \ p = 0.000 \)
Gaeltacht x English: \( H(1) = 9.492, \ p = 0.002 \)
Gaelscoil x English: $H(1)= 23.158, p=0.000$ *

Item 7: Was the plot credible for this type of game?

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>115.55</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>77.26</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>140.33</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 7:

$H(2)=21.519, p=0.000$ *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 7:

Gaeltacht x Gaelscoil: $H(1)=5.782, p=0.016$ *
Gaeltacht x English: $H(1)=7.212, p=0.007$ *
Gaelscoil x English: $H(1)=19.079, p=0.000$ *

Item 8: The game held my attention.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>119.30</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>76.48</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>138.15</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Test Statistics$^{a,b}$

<table>
<thead>
<tr>
<th>Item 8</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19.302</td>
<td>2</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: School Type
Kruskal-Wallis Test Statistics for Item 8:

\[ H(2)=19.302, \ p=0.000 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 8:

Gaeltacht x Gaelscoil: \[ H(1)=10.337, \ p=0.001 \]
Gaeltacht x English: \[ H(1)=5.057, \ p=0.025 \]
Gaelscoil x English: \[ H(1)=15.674, \ p=0.000 \]

Item 10: There is a good balance between enjoyment and language learning in this game.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Type</td>
<td>N</td>
</tr>
<tr>
<td>Gaeltacht</td>
<td>86</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 10:

\[ H(2)=6.794, \ p=0.033 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:

Gaeltacht x Gaelscoil: \[ H(1)=0.628, \ p=0.428 \]
Gaeltacht x English: \[ H(1)=4.589, \ p=0.032 \]
Gaelscoil x English: \[ H(1)=3.849, \ p=0.050 \]

Item 11: The overall standard of the Irish used in this game is at about the right level for me.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Type</td>
<td>N</td>
</tr>
<tr>
<td>Gaeltacht</td>
<td>86</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
</tr>
</tbody>
</table>
Kruskal-Wallis Test Statistics for Item 11:

\[ H(2) = 6.724, p = 0.035 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 11:

Gaeltacht x Gaelscoil: \( H(1) = 4.299, p = 0.038 \)
Gaeltacht x English: \( H(1) = 0.072, p = 0.788 \)
Gaelscoil x English: \( H(1) = 7.350, p = 0.007 \)

Item 13: Did you experience particular difficulties with the dialects that are used in Digichaint?

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 13</td>
<td>86</td>
<td>137.81</td>
</tr>
<tr>
<td>Gaeltacht</td>
<td>25</td>
<td>136.04</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>139</td>
<td>115.99</td>
</tr>
<tr>
<td>English</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 13:

\[ H(2) = 6.114, p = 0.047 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 13:

Gaeltacht x Gaelscoil: \( H(1) = 0.032, p = 0.858 \)
Gaeltacht x English: \( H(1) = 1.951, p = 0.162 \)
Gaelscoil x English: \( H(1) = 5.385, p = 0.020 \)
Item 14: I found it no difficult to understand the computer-generated voice than I would if natural voices were used.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>116.19</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>103.96</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>135.13</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 14:

$$H(2)=6.739, p=0.034 \,*$$

Kruskal-Wallis Test Statistics for post hoc analysis of Item 14:

- Gaeltacht x Gaelscoil: $$H(1)=0.809, p=0.368$$
- Gaeltacht x English: $$H(1)=4.209, p=0.040 \,*$$
- Gaelscoil x English: $$H(1)=4.001, p=0.045 \,*$$

Item 17_1: Give your opinion on the usefulness of the concept of producing an interactive language learning game in order to practise Irish.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 17_1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaeltacht</td>
<td>86</td>
<td>115.49</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>25</td>
<td>102.96</td>
</tr>
<tr>
<td>English</td>
<td>139</td>
<td>135.74</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 17_1:

$$H(2)=8.379, p=0.015 \,*$$

Kruskal-Wallis Test Statistics for post hoc analysis of Item 17_1:
Gaeltacht x Gaelscoil: H(1)=0.773, p=0.379
Gaeltacht x English: H(1)= 5.157, p=0.023 *
Gaelscoil x English: H(1)= 5.187, p=0.023 *

**Frequency Playing Computer Games**

**Item 4:** The dictionary is helpful as an aid to learning Irish in this game.

<table>
<thead>
<tr>
<th>Ranks</th>
<th></th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency playing computer games</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Mean Rank</td>
</tr>
<tr>
<td>Item 4</td>
<td>Never</td>
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<tr>
<td></td>
<td>Seldom</td>
<td>133</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
<th>Item 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>8.656</td>
</tr>
<tr>
<td>df</td>
<td>3</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>0.034</td>
</tr>
</tbody>
</table>

*a.* Kruskal Wallis Test
*b.* Grouping Variable: Frequency playing computer games

**Kruskal-Wallis Test Statistics for Item 4:**

H(3) = 8.656, p=0.034 *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 4:**

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: H(1) = 1.970, p=0.160
1 x 3: H(1) = 1.731, p=0.188
1 x 4: H(1) = 0.017, p=0.897
2 x 3: H(1) = 7.912, p=0.005 *
2 x 4: H(1) = 0.556, p=0.456
3 x 4: H(1) = 1.198, p=0.274

**Item 5:** Rate your overall enjoyment of this particular game as a language learning experience.

<table>
<thead>
<tr>
<th>Ranks</th>
<th></th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency playing computer games</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Mean Rank</td>
</tr>
<tr>
<td>Item</td>
<td>Never</td>
<td>49</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
<th>Item 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>7.989</td>
</tr>
<tr>
<td>df</td>
<td>3</td>
</tr>
</tbody>
</table>
5 Seldom 133 136.25  Asymp. Sig. .046 a. Kruskal Wallis Test
Weekly 50 115.22  b. Grouping
Daily 18 120.00  Variable: Frequency
Total 250  playing computer
games

Kruskal-Wallis Test Statistics for Item 5:

H(3) = 7.989, p = 0.046 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 5:

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: H(1) = 5.785, p = 0.016 *
1 x 3: H(1) = 0.372, p = 0.542
1 x 4: H(1) = 0.439, p = 0.508
2 x 3: H(1) = 3.964, p = 0.046 *
2 x 4: H(1) = 1.050, p = 0.306
3 x 4: H(1) = 0.081, p = 0.776

Item 8: The game held my attention.

<table>
<thead>
<tr>
<th>Frequency playing computer games</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 8 Never</td>
<td>49</td>
<td>103.27</td>
</tr>
<tr>
<td>Seldom</td>
<td>133</td>
<td>137.44</td>
</tr>
<tr>
<td>Weekly</td>
<td>50</td>
<td>107.21</td>
</tr>
<tr>
<td>Daily</td>
<td>18</td>
<td>148.58</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 8:

H(3) = 15.670, p = 0.001 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 8:
(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: $H(1) = 9.716$, $p=0.002$ *
1 x 3: $H(1) = 0.116$, $p=0.733$
1 x 4: $H(1) = 5.420$, $p=0.020$ *
2 x 3: $H(1) = 7.764$, $p=0.005$ *
2 x 4: $H(1) = 0.607$, $p=0.436$
3 x 4: $H(1) = 4.283$, $p=0.038$ *

**Item 10:** There is a good balance between enjoyment and language learning in this game.

<table>
<thead>
<tr>
<th>Frequency playing computer games</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 10 Never</td>
<td>49</td>
<td>107.60</td>
</tr>
<tr>
<td>Seldom</td>
<td>133</td>
<td>136.33</td>
</tr>
<tr>
<td>Weekly</td>
<td>50</td>
<td>116.92</td>
</tr>
<tr>
<td>Daily</td>
<td>18</td>
<td>118.00</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 10:**

$H(3) = 9.033$, $p=0.029$ *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:**

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: $H(1) = 7.329$, $p=0.007$ *
1 x 3: $H(1) = 0.438$, $p=0.508$
1 x 4: $H(1) = 0.634$, $p=0.426$
2 x 3: $H(1) = 3.176$, $p=0.075$
2 x 4: $H(1) = 1.635$, $p=0.201$
3 x 4: $H(1) = 0.026$, $p=0.873$

**Item 12:** The synthesised voices were sufficiently clear to make the speech intelligible.

<table>
<thead>
<tr>
<th>Frequency playing computer games</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 12 Never</td>
<td>49</td>
<td>108.10</td>
</tr>
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</table>

**Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>Item 10</th>
<th>Item 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>9.033</td>
<td>11.365</td>
</tr>
<tr>
<td>df</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>0.029</td>
<td>0.010</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Frequency playing computer games

404
Kruskal-Wallis Test Statistics for Item 12:

\[ H(3) = 11.365, p = 0.010^* \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 12:

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: \( H(1) = 7.532, p = 0.006^* \)
1 x 3: \( H(1) = 0.049, p = 0.825 \)
1 x 4: \( H(1) = 0.151, p = 0.698 \)
2 x 3: \( H(1) = 6.763, p = 0.009^* \)
2 x 4: \( H(1) = 2.219, p = 0.136 \)
3 x 4: \( H(1) = 0.035, p = 0.852 \)

Level of Understanding of Irish

Item 1: Rate the graphics used in this game on a scale of 1 – 5.

<table>
<thead>
<tr>
<th>Levels of understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest Level</td>
<td>2</td>
<td>159.50</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>61.17</td>
</tr>
<tr>
<td>2</td>
<td>38</td>
<td>156.21</td>
</tr>
<tr>
<td>3</td>
<td>114</td>
<td>130.32</td>
</tr>
<tr>
<td>Highest Level</td>
<td>93</td>
<td>108.38</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 1:

\[ H(4) = 17.629, p = 0.001^* \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 1:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \( H(1) = 1.667, p = 0.197 \)
1 x 3: \( H(1) = 0.005, p = 0.944 \)
1 x 4: H(1) = 0.355, \( p = 0.551 \)
1 x 5: H(1) = 1.272, \( p = 0.259 \)

2 x 3: H(1) = 4.132, \( p = 0.042 \)
2 x 4: H(1) = 2.875, \( p = 0.090 \)
2 x 5: H(1) = 1.934, \( p = 0.164 \)

3 x 4: H(1) = 4.341, \( p = 0.037 \)
3 x 5: H(1) = 13.365, \( p = 0.000 \)

4 x 5: H(1) = 5.426, \( p = 0.020 \)

**Item 3:** I learned some new phrases/words/grammar points as I played the game.

<table>
<thead>
<tr>
<th>Item 3</th>
<th>Level of understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lowest Level</td>
<td>2</td>
<td>103.25</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>3</td>
<td>105.17</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>38</td>
<td>136.49</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>114</td>
<td>137.50</td>
</tr>
<tr>
<td>5</td>
<td>Highest Level</td>
<td>93</td>
<td>107.44</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 3:**

H(4) = 11.978, \( p = 0.018 \)

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 3:**

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: H(1) = 0.000, \( p = 1.000 \)
1 x 3: H(1) = 0.496, \( p = 0.481 \)
1 x 4: H(1) = 0.587, \( p = 0.444 \)
1 x 5: H(1) = 0.001, \( p = 0.978 \)

2 x 3: H(1) = 0.620, \( p = 0.431 \)
2 x 4: H(1) = 0.676, \( p = 0.411 \)
2 x 5: H(1) = 0.005, \( p = 0.946 \)

3 x 4: H(1) = 0.010, \( p = 0.919 \)
3 x 5: $H(1) = 5.107, p=0.024^*$

4 x 5: $H(1) = 10.238, p=0.001^*$

**Item 4:** The dictionary is helpful as an aid to learning Irish in this game.

<table>
<thead>
<tr>
<th>Item 4</th>
<th>Level of understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Lowest Level</td>
<td>2</td>
<td>170.25</td>
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</tr>
<tr>
<td>2</td>
<td>3</td>
<td>120.50</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>145.01</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>114</td>
<td>132.52</td>
<td></td>
</tr>
<tr>
<td>5 = Highest Level</td>
<td>93</td>
<td>108.12</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
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</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 4:**

$H(4) = 12.280, p=0.015^*$

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 4:**

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: $H(1) = 1.500, p=0.221$
1 x 3: $H(1) = 0.371, p=0.542$
1 x 4: $H(1) = 0.663, p=0.416$
1 x 5: $H(1) = 1.608, p=0.205$
2 x 3: $H(1) = 0.634, p=0.426$
2 x 4: $H(1) = 0.142, p=0.707$
2 x 5: $H(1) = 0.202, p=0.653$
3 x 4: $H(1) = 0.997, p=0.318$
3 x 5: $H(1) = 8.678, p=0.003^*$
4 x 5: $H(1) = 6.892, p=0.009^*$

**Item 5:** Rate your overall enjoyment of this particular game as a language learning experience.

<table>
<thead>
<tr>
<th>Item 5</th>
<th>Level of understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Lowest Level</td>
<td>2</td>
<td>187.25</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics$^{a,b}$**

<table>
<thead>
<tr>
<th>Item 4</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.280</td>
<td>4</td>
<td>.015</td>
<td></td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Level of understanding of Irish

407
Kruskal-Wallis Test Statistics for Item 5:

\[ H(4) = 12.972, p=0.011 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 5:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \[ H(1) = 3.158, p=0.076 \]
1 x 3: \[ H(1) = 1.242, p=0.265 \]
1 x 4: \[ H(1) = 1.516, p=0.218 \]
1 x 5: \[ H(1) = 2.142, p=0.143 \]

2 x 3: \[ H(1) = 7.487, p=0.006 \]
2 x 4: \[ H(1) = 5.879, p=0.015 \]
2 x 5: \[ H(1) = 3.807, p=0.051 \]

3 x 4: \[ H(1) = 0.758, p=0.384 \]
3 x 5: \[ H(1) = 4.747, p=0.029 \]

4 x 5: \[ H(1) = 3.289, p=0.070 \]

Item 10: There is a good balance between enjoyment and language learning in this game.
Kruskal-Wallis Test Statistics for Item 10:

\[ H(4) = 9.800, p=0.044 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \[ H(1) = 3.333, p=0.068 \]
1 x 3: \[ H(1) = 0.021, p=0.884 \]
1 x 4: \[ H(1) = 0.030, p=0.861 \]
1 x 5: \[ H(1) = 0.248, p=0.619 \]

2 x 3: \[ H(1) = 7.015, p=0.008 \]
2 x 4: \[ H(1) = 7.775, p=0.005 \]
2 x 5: \[ H(1) = 5.821, p=0.016 \]

3 x 4: \[ H(1) = 0.009, p=0.925 \]
3 x 5: \[ H(1) = 1.256, p=0.262 \]

4 x 5: \[ H(1) = 2.079, p=0.149 \]

Item 13: Did you experience particular difficulties with the dialects that are used in Digichaint?

<table>
<thead>
<tr>
<th>Level of understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 13 1 = Lowest Level</td>
<td>2</td>
<td>39.00</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>84.00</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>110.37</td>
</tr>
<tr>
<td>4</td>
<td>114</td>
<td>120.18</td>
</tr>
<tr>
<td>5 = Highest Level</td>
<td>93</td>
<td>141.41</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 13:

\[ H(4) = 11.969, p=0.018 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 13:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \[ H(1) = 0.667, p=0.414 \]
1 x 3: H(1) = 2.139, p=0.144
1 x 4: H(1) = 3.138, p=0.076
1 x 5: H(1) = 3.913, p=0.048 *

2 x 3: H(1) = 0.449, p=0.503
2 x 4: H(1) = 0.918, p=0.338
2 x 5: H(1) = 1.881, p=0.170

3 x 4: H(1) = 0.707, p=0.400
3 x 5: H(1) = 5.219, p=0.022 *

4 x 5: H(1) = 5.276, p=0.022 *

**Attitude towards Synthetic Voices**

**Item 5: Rate your overall enjoyment of this particular game as a language learning experience.**

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Attitude towards synthesised voices</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 5</td>
<td>1 = ...hate...</td>
<td>6</td>
<td>58.92</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>47</td>
<td>118.14</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>144</td>
<td>122.16</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>48</td>
<td>146.49</td>
</tr>
<tr>
<td></td>
<td>5 = ...suitable...</td>
<td>5</td>
<td>169.40</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 5:**

H(4) = 14.118, p=0.007 *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 5:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 5.527, p=0.019 *
1 x 3: H(1) = 5.258, p=0.022 *
1 x 4: H(1) = 8.317, p=0.004 *
1 x 5: H(1) = 2.912, p=0.088
Item 9: I was more focused on the plot of the game than I was on the language being used.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards synthesised voices</td>
<td>Mean</td>
</tr>
<tr>
<td>Item 9</td>
<td>N</td>
</tr>
<tr>
<td>1 = ...hate...</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>3</td>
<td>144</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
</tr>
<tr>
<td>5 = ...suitable...</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 9:**

$H(4) = 11.963, p=0.018 *$

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 9:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: $H(1) = 3.780, p=0.052$
1 x 3: $H(1) = 1.310, p=0.252$
1 x 4: $H(1) = 3.824, p=0.051$
1 x 5: $H(1) = 0.150, p=0.699$

2 x 3: $H(1) = 4.484, p=0.034 *$
2 x 4: $H(1) = 0.532, p=0.466$
2 x 5: $H(1) = 1.126, p=0.289$

3 x 4: $H(1) = 6.902, p=0.009 *$
3 x 5: $H(1) = 0.266, p=0.606$

4 x 5: $H(1) = 1.252, p=0.263$
Item 10: There is a good balance between enjoyment and language learning in this game.

<table>
<thead>
<tr>
<th>Attitude towards synthesised voices</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 10 1 = ...hate...</td>
<td>6</td>
<td>90.50</td>
</tr>
<tr>
<td>2</td>
<td>47</td>
<td>106.91</td>
</tr>
<tr>
<td>3</td>
<td>144</td>
<td>126.78</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
<td>141.52</td>
</tr>
<tr>
<td>5 = ...suitable...</td>
<td>5</td>
<td>151.50</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 10:

\[ H(4) = 9.916, \ p=0.042 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:

(Key: Group 1 = 'Hate' synthesised voices; Group 2: 'Tolerate' synthesised voices but prefer human voices; Group 3: 'neutral', Group 4: synthesised voices 'sometimes suitable'; Group 5: synthesised voices are 'sometimes more suitable than human voices')

\[ H(1) = 0.270, \ p=0.603 \]
\[ H(1) = 2.005, \ p=0.157 \]
\[ H(1) = 3.584, \ p=0.058 \]
\[ H(1) = 1.354, \ p=0.245 \]

\[ H(1) = 3.597, \ p=0.058 \]
\[ H(1) = 6.897, \ p=0.009 \]
\[ H(1) = 1.624, \ p=0.203 \]

\[ H(1) = 2.057, \ p=0.152 \]
\[ H(1) = 0.801, \ p=0.371 \]

\[ H(1) = 0.220, \ p=0.639 \]
Item 12: The synthesised voices were sufficiently clear to make the speech intelligible.

<table>
<thead>
<tr>
<th>Attitude towards synthesised voices</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 12 1 = ...hate...</td>
<td>6</td>
<td>65.50</td>
</tr>
<tr>
<td>2</td>
<td>47</td>
<td>117.44</td>
</tr>
<tr>
<td>3</td>
<td>144</td>
<td>122.19</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
<td>145.04</td>
</tr>
<tr>
<td>5 = ...suitable...</td>
<td>5</td>
<td>181.10</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 12:

H(4) = 12.952, p = 0.012 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 12:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 3.452, p = 0.063
1 x 3: H(1) = 4.091, p = 0.043 *
1 x 4: H(1) = 6.336, p = 0.012 *
1 x 5: H(1) = 5.456, p = 0.019 *

2 x 3: H(1) = 0.018, p = 0.672
2 x 4: H(1) = 3.908, p = 0.048 *
2 x 5: H(1) = 3.910, p = 0.048 *

3 x 4: H(1) = 4.154, p = 0.042 *
3 x 5: H(1) = 3.660, p = 0.056

4 x 5: H(1) = 1.290, p = 0.256
Item 15: In general, I think that computer-generated voices give a better atmosphere to computer games than natural voices do.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards synthesised voices</td>
<td>Item 15</td>
</tr>
<tr>
<td>N</td>
<td>Mean Rank</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Item 15</td>
<td>6</td>
</tr>
<tr>
<td>1 = ...hate...</td>
<td>47</td>
</tr>
<tr>
<td>2</td>
<td>144</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 15:

H(4) = 11.785, p = 0.019 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 15:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 0.104, p = 0.747
1 x 3: H(1) = 0.137, p = 0.711
1 x 4: H(1) = 0.553, p = 0.457
1 x 5: H(1) = 2.870, p = 0.090
2 x 3: H(1) = 0.002, p = 0.966
2 x 4: H(1) = 4.223, p = 0.040 *
2 x 5: H(1) = 5.470, p = 0.019 *
3 x 4: H(1) = 6.259, p = 0.012 *
3 x 5: H(1) = 5.436, p = 0.020 *
4 x 5: H(1) = 2.837, p = 0.092
Item 17_1: Give your opinion on the usefulness of the concept of producing an interactive language learning game in order to practise Irish.

<table>
<thead>
<tr>
<th>Attitude towards synthesised voices</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1 = &quot;...hate...&quot;</td>
<td>6</td>
<td>50.33</td>
</tr>
<tr>
<td>17_1</td>
<td>47</td>
<td>115.61</td>
</tr>
<tr>
<td>3</td>
<td>144</td>
<td>123.24</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
<td>147.91</td>
</tr>
<tr>
<td>5 = &quot;...suitable...&quot;</td>
<td>5</td>
<td>158.80</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 17_1:**

\[ H(4) = 16.076, p=0.003 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 17_1:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 5.730, \( p=0.017 \) *
1 x 3: H(1) = 7.633, \( p=0.006 \) *
1 x 4: H(1) = 9.655, \( p=0.002 \) *
1 x 5: H(1) = 4.287, \( p=0.038 \) *
2 x 3: H(1) = 0.525, \( p=0.469 \)
2 x 4: H(1) = 5.661, \( p=0.017 \) *
2 x 5: H(1) = 1.750, \( p=0.186 \)
3 x 4: H(1) = 5.374, \( p=0.020 \) *
3 x 5: H(1) = 1.471, \( p=0.225 \)
4 x 5: H(1) = 0.205, \( p=0.651 \)
Item 17_2: Give your opinion on the quality of the synthesised voices: to what extent do you think the voices are adequate for the type of game presented here?

<table>
<thead>
<tr>
<th>Attitude towards synthesised voices</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1 = ...hate...</td>
<td>6</td>
<td>88.67</td>
</tr>
<tr>
<td>17_2</td>
<td>47</td>
<td>122.59</td>
</tr>
<tr>
<td>3</td>
<td>144</td>
<td>119.45</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
<td>145.78</td>
</tr>
<tr>
<td>5 = ...suitable...</td>
<td>5</td>
<td>176.50</td>
</tr>
<tr>
<td>Total</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 17_2:

H(4) = 10.693, p=0.030 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 17_2:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 1.732, p=0.188
1 x 3: H(1) = 1.126, p=0.289
1 x 4: H(1) = 4.157, p=0.041 *
1 x 5: H(1) = 3.595, p=0.058
2 x 3: H(1) = 0.097, p=0.755
2 x 4: H(1) = 3.413, p=0.065
2 x 5: H(1) = 3.335, p=0.068
3 x 4: H(1) = 5.554, p=0.018 *
3 x 5: H(1) = 3.369, p=0.066
4 x 5: H(1) = 1.173, p=0.279
**F2: Kruskal-Wallis Test Results: Fáilte go TCD**

Expansion of Kruskal-Wallis Test for items showing significance in Table 5.11, Chapter 5. These expansions show the mean rank scores and the direction of the differences. They also give the post hoc analysis showing where the difference lies.

**Gender**

**Item 10: There is a good balance between enjoyment and language learning in this game.**

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>N</td>
</tr>
<tr>
<td>Item 10</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 10:

H(1)=4.107, p=0.043 *

**Between-School Differences**

**Item 5: Would you enjoy using this type of activity to develop your aural Irish skills, should be available and easily accessible in your school?**

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Type</td>
<td>N</td>
</tr>
<tr>
<td>Item 5</td>
<td>Gaeltacht</td>
</tr>
<tr>
<td></td>
<td>Gaelscoil</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Kruskal-Wallis Test Statistics for Item 5:

\[ H(2) = 7.138, p = 0.028 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 5:

Gaeltacht x Gaelscoil: \( H(1) = 1.450, p = 0.228 \)
Gaeltacht x English: \( H(1) = 3.802, p = 0.051 \)
Gaelscoil x English: \( H(1) = 4.633, p = 0.031 \)

Item 7: Do you think this type of activity would make the learning of Irish more attractive?

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaeltacht</td>
<td>85</td>
<td>120.86</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>23</td>
<td>89.63</td>
</tr>
<tr>
<td>English</td>
<td>144</td>
<td>135.72</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 7:

\[ H(2) = 10.625, p = 0.005 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 7:

Gaeltacht x Gaelscoil: \( H(1) = 4.148, p = 0.042 \)
Gaeltacht x English: \( H(1) = 2.851, p = 0.091 \)
Gaelscoil x English: \( H(1) = 9.568, p = 0.002 \)
Item 8: The overall standard of Irish used is at about the right level for me.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 8 Gaeltacht</td>
<td>85</td>
<td>119.98</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>23</td>
<td>163.24</td>
</tr>
<tr>
<td>English</td>
<td>144</td>
<td>124.48</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.059</td>
<td>2</td>
<td>.018</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: School Type

Kruskal-Wallis Test Statistics for Item 8:

$H(2)=8.059, p=0.018$ *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 8:

Gaeltacht x Gaelscoil: $H(1)=6.231, p=0.013$ *
Gaeltacht x English: $H(1)=0.300, p=0.584$
Gaelscoil x English: $H(1)=7.816, p=0.005$ *

Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 9 Gaeltacht</td>
<td>85</td>
<td>144.71</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>23</td>
<td>128.24</td>
</tr>
<tr>
<td>English</td>
<td>144</td>
<td>115.48</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.589</td>
<td>2</td>
<td>.008</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: School Type

Kruskal-Wallis Test Statistics for Item 9:

$H(2)=9.589, p=0.008$ *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 9:

Gaeltacht x Gaelscoil: $H(1)=0.783, p=0.376$
Gaeltacht x English: $H(1)=9.889, p=0.002$ *
Gaelscoil x English: $H(1)=0.532, p=0.466$
Item 10: Did you experience particular difficulties with the dialects that are used in the video?

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>85</td>
<td>144.79</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>23</td>
<td>137.13</td>
</tr>
<tr>
<td>English</td>
<td>144</td>
<td>114.00</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 10:

\[ H(2)=11.224, \ p=0.004 * \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:

Gaeltacht x Gaelscoil: \( H(1)=0.208, \ p=0.649 \)
Gaeltacht x English: \( H(1)=10.702, \ p=0.001 * \)
Gaelscoil x English: \( H(1)=2.168, \ p=0.141 \)

Item 11_3: Please give your opinion on the attractiveness of the voices.

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>85</td>
<td>144.35</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>23</td>
<td>124.98</td>
</tr>
<tr>
<td>English</td>
<td>144</td>
<td>116.21</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 11_3:

\[ H(2)=8.762, \ p=0.013 * \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_3:

a. Kruskal Wallis Test
b. Grouping Variable: School Type
Gaeltacht x Gaelscoil: \( H(1) = 1.288, p = 0.256 \)
Gaeltacht x English: \( H(1) = 8.833, p = 0.003 \) *
Gaelscoil x English: \( H(1) = 0.277, p = 0.599 \)

**Frequency Playing Computer Games**

**Item 1:** How would you describe your judgment of the background setting and the graphics in the video?

<table>
<thead>
<tr>
<th>Rank</th>
<th>Frequency Playing Computer Games</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Never</td>
<td>48</td>
<td>102.92</td>
</tr>
<tr>
<td>2</td>
<td>Seldom</td>
<td>139</td>
<td>137.31</td>
</tr>
<tr>
<td>3</td>
<td>Weekly</td>
<td>45</td>
<td>123.33</td>
</tr>
<tr>
<td>4</td>
<td>Daily</td>
<td>20</td>
<td>115.08</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

<table>
<thead>
<tr>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.928</td>
<td>3</td>
<td>0.019</td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 1:**

\( H(3) = 9.928, p = 0.019 \) *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 1:**

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: \( H(1) = 9.014, p = 0.003 \) *
1 x 3: \( H(1) = 2.230, p = 0.135 \)
1 x 4: \( H(1) = 0.372, p = 0.542 \)
2 x 3: \( H(1) = 1.492, p = 0.222 \)
2 x 4: \( H(1) = 1.780, p = 0.182 \)
3 x 4: \( H(1) = 0.220, p = 0.639 \)
Item 11_1: Please give your opinion on the usefulness of producing graphics with synthesised voices in order to practise aural comprehension.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Frequency Playing Computer Games</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 11_1</td>
<td>Never</td>
<td>48</td>
<td>98.76</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
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<td>Weekly</td>
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<tr>
<td></td>
<td>Daily</td>
<td>20</td>
<td>117.25</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 11_1:

\[ H(3) = 12.418, p=0.006 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_1:

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: \[ H(1) = 10.409, p=0.001 \]
1 x 3: \[ H(1) = 7.473, p=0.006 \]
1 x 4: \[ H(1) = 1.786, p=0.181 \]
2 x 3: \[ H(1) = 0.039, p=0.844 \]
2 x 4: \[ H(1) = 1.416, p=0.234 \]
3 x 4: \[ H(1) = 1.391, p=0.238 \]
Level of Understanding of Irish

Item 1: How would you describe your judgment of the background setting and the graphics in the video?

<table>
<thead>
<tr>
<th>Level of Understanding of Irish</th>
<th>N</th>
<th>Rank</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Lowest Level</td>
<td>3</td>
<td>89.83</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>30.83</td>
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</tr>
<tr>
<td>3</td>
<td>47</td>
<td>135.94</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>108</td>
<td>137.77</td>
<td></td>
</tr>
<tr>
<td>5 = Highest Level</td>
<td>88</td>
<td>115.40</td>
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<td>Total</td>
<td>252</td>
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</tbody>
</table>

Test Statistics\(^{a, b}\)

<table>
<thead>
<tr>
<th>Item 1</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18.919</td>
<td>4</td>
<td>.001</td>
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</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 1:

\(H(4) = 18.919, p=0.001\) *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 1:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \(H(1) = 2.667, p=0.102\)
1 x 3: \(H(1) = 1.476, p=0.226\)
1 x 4: \(H(1) = 1.562, p=0.211\)
1 x 5: \(H(1) = 0.353, p=0.552\)

2 x 3: \(H(1) = 12.515, p=0.000\) *
2 x 4: \(H(1) = 12.848, p=0.000\) *
2 x 5: \(H(1) = 9.277, p=0.002\) *

3 x 4: \(H(1) = 0.044, p=0.835\)
3 x 5: \(H(1) = 2.944, p=0.086\)

4 x 5: \(H(1) = 5.234, p=0.022\) *
Item 3: To what extent do the movements of the characters add credibility and clarity to the conversational exchanges?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Understanding of Irish</td>
<td>Mean Rank</td>
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<tr>
<td>Item 3</td>
<td>N</td>
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<td>1 = Lowest Level</td>
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<td>2</td>
<td>6</td>
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<tr>
<td>3</td>
<td>47</td>
</tr>
<tr>
<td>4</td>
<td>108</td>
</tr>
<tr>
<td>5 = Highest Level</td>
<td>88</td>
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<tr>
<td>Total</td>
<td>252</td>
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</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 3:

H(4) = 12.201, p = 0.016 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 3:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: H(1) = 3.920, p = 0.048 *
1 x 3: H(1) = 0.079, p = 0.778
1 x 4: H(1) = 0.304, p = 0.581
1 x 5: H(1) = 0.002, p = 0.962

2 x 3: H(1) = 3.281, p = 0.070
2 x 4: H(1) = 9.702, p = 0.002 *
2 x 5: H(1) = 5.282, p = 0.022 *

3 x 4: H(1) = 3.919, p = 0.048 *
3 x 5: H(1) = 0.308, p = 0.579

4 x 5: H(1) = 3.170, p = 0.075

Item 7: Do you think this type of activity would make the learning of Irish more attractive?

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<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>Item 7</td>
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</tbody>
</table>

424
Level of Understanding of Irish | N | Mean Rank | Chi-Square | df | Asymp. Sig.
--- | --- | --- | --- | --- | ---
Item 7 | 1 = Lowest Level | 3 | 159.50 | 10.958 | 4 | .027
| 2 | 6 | 60.33 |
| 3 | 47 | 134.87 |
| 4 | 108 | 133.85 |
| 5 = Highest Level | 88 | 116.40 |
| Total | 252 |

**Kruskal-Wallis Test Statistics for Item 7:**

$$H(4) = 10.958, p=0.027$$

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 7:**

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: H(1) = 3.630, p=0.057
1 x 3: H(1) = 0.387, p=0.534
1 x 4: H(1) = 0.422, p=0.516
1 x 5: H(1) = 1.316, p=0.251
2 x 3: H(1) = 6.446, p=0.011
2 x 4: H(1) = 6.697, p=0.010
2 x 5: H(1) = 4.313, p=0.038
3 x 4: H(1) = 0.007, p=0.933
3 x 5: H(1) = 2.497, p=0.114
4 x 5: H(1) = 3.394, p=0.065

**Item 8:** The overall standard of the Irish used is at about the right level for me.
Kruskal-Wallis Test Statistics for Item 8:

\[ H(4) = 13.471, p = 0.009^* \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 8:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \( H(1) = 4.613, p = 0.032^* \)
1 x 3: \( H(1) = 7.851, p = 0.005^* \)
1 x 4: \( H(1) = 9.626, p = 0.002^* \)
1 x 5: \( H(1) = 7.061, p = 0.008^* \)
2 x 3: \( H(1) = 1.691, p = 0.194 \)
2 x 4: \( H(1) = 3.922, p = 0.048^* \)
2 x 5: \( H(1) = 2.720, p = 0.099 \)
3 x 4: \( H(1) = 1.474, p = 0.225 \)
3 x 5: \( H(1) = 1.822, p = 0.177 \)
4 x 5: \( H(1) = 0.334, p = 0.563 \)

Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.
**Kruskal-Wallis Test Statistics for Item 9:**

\[ H(4) = 17.688, p = 0.001 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 9:**

(Key: Group 1 = Lowest level  -  Group 5 = Highest level of understanding of Irish)

1 x 2: \( H(1) = 0.990, p = 0.320 \)
1 x 3: \( H(1) = 0.000, p = 0.983 \)
1 x 4: \( H(1) = 0.410, p = 0.522 \)
1 x 5: \( H(1) = 0.659, p = 0.417 \)

2 x 3: \( H(1) = 3.497, p = 0.061 \)
2 x 4: \( H(1) = 8.897, p = 0.003 \)
2 x 5: \( H(1) = 10.767, p = 0.001 \)

3 x 4: \( H(1) = 5.286, p = 0.021 \)
3 x 5: \( H(1) = 8.508, p = 0.004 \)

4 x 5: \( H(1) = 0.796, p = 0.372 \)

**Item 10: Did you experience particular difficulties with the dialects that are used in the video?**

<table>
<thead>
<tr>
<th>Level of Understanding of Irish</th>
<th>Item 10</th>
<th>Mean Rank</th>
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</thead>
<tbody>
<tr>
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<td>3</td>
<td>27.00</td>
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<tr>
<td>2</td>
<td>6</td>
<td>67.58</td>
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<tr>
<td>3</td>
<td>47</td>
<td>99.24</td>
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<tr>
<td>4</td>
<td>108</td>
<td>127.71</td>
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<tr>
<td>5 = Highest Level</td>
<td>88</td>
<td>146.98</td>
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<td>Total</td>
<td>252</td>
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</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 10:**

\[ H(4) = 25.683, p = 0.000 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:**

(Key: Group 1 = Lowest level  -  Group 5 = Highest level of understanding of Irish)
Item 11_1: Please give your opinion on the usefulness of producing graphics with synthesised voices in order to practice aural comprehension.

**Ranks**

<table>
<thead>
<tr>
<th>Level of Understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
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</thead>
<tbody>
<tr>
<td>Item 11_1 1 = Lowest Level</td>
<td>3</td>
<td>133.50</td>
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<tr>
<td>2</td>
<td>6</td>
<td>56.17</td>
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<td>3</td>
<td>47</td>
<td>134.54</td>
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<tr>
<td>4</td>
<td>108</td>
<td>132.48</td>
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<tr>
<td>5 = Highest Level</td>
<td>88</td>
<td>119.43</td>
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<td>Total</td>
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</table>

**Test Statistics**

<table>
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<tr>
<th>Item 11_1</th>
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</thead>
<tbody>
<tr>
<td>Chi-Square</td>
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<tr>
<td>df</td>
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<tr>
<td>Asymp. Sig.</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Level of Understanding of Irish

**Kruskal-Wallis Test Statistics for Item 11_1:**

H(4) = 9.971, p=0.041 *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_1:**

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: H(1) = 2.123, p=0.145
1 x 3: H(1) = 0.000, p=1.000
1 x 4: H(1) = 0.002, p=0.967
1 x 5: H(1) = 0.127, p=0.722
2 x 3: H(1) = 6.425, p=0.011 *
**Item 11.3:** Please give your opinion on the attractiveness of the voices.

<table>
<thead>
<tr>
<th>Level of Understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
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<tbody>
<tr>
<td>Item 11.3</td>
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<tr>
<td>1 = Lowest Level</td>
<td>3</td>
<td>63.33</td>
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<td>2</td>
<td>6</td>
<td>91.00</td>
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<tr>
<td>3</td>
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<td>108</td>
<td>129.14</td>
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<tr>
<td>5 = Highest Level</td>
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<td>138.90</td>
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<td>Total</td>
<td>252</td>
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</table>

**Kruskal-Wallis Test Statistics for Item 11.3:**

\[ H(4) = 11.171, \ p = 0.025 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 11.3:**

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \[ H(1) = 0.720, \ p = 0.396 \]
1 x 3: \[ H(1) = 1.187, \ p = 0.276 \]
1 x 4: \[ H(1) = 2.622, \ p = 0.105 \]
1 x 5: \[ H(1) = 3.201, \ p = 0.074 \]

2 x 3: \[ H(1) = 0.159, \ p = 0.690 \]
2 x 4: \[ H(1) = 1.895, \ p = 0.169 \]
2 x 5: \[ H(1) = 2.627, \ p = 0.105 \]

3 x 4: \[ H(1) = 3.809, \ p = 0.051 \]
3 x 5: \[ H(1) = 6.719, \ p = 0.010 \]

4 x 5: \[ H(1) = 1.041, \ p = 0.308 \]

429
Attitude towards Synthetic Voices

Item 1: How would you describe your judgment of the background setting and the graphics in the video?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics$^{a,b}$</th>
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<tbody>
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<td>Attitude to</td>
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<tr>
<td>Item 1</td>
<td>synthesised voices</td>
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<tr>
<td></td>
<td>(pre-game)</td>
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<tr>
<td>Total</td>
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</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 1:

$H(4) = 11.353, p=0.023^*$

Kruskal-Wallis Test Statistics for post hoc analysis of Item 1:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: $H(1) = 4.148, p=0.042^*$
1 x 3: $H(1) = 6.391, p=0.011^*$
1 x 4: $H(1) = 6.969, p=0.008^*$
1 x 5: $H(1) = 4.282, p=0.039^*$
2 x 3: $H(1) = 0.476, p=0.490$
2 x 4: $H(1) = 1.637, p=0.201$
2 x 5: $H(1) = 3.857, p=0.050$
3 x 4: $H(1) = 0.640, p=0.424$
3 x 5: $H(1) = 2.818, p=0.093$
4 x 5: $H(1) = 2.311, p=0.128$
Item 3: To what extent do the movements of the characters add credibility and clarity to the conversational exchanges?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics(^{a,b})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude to synthesised voices (pre-game)</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>Rank</td>
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<tr>
<td>13</td>
<td>91.46</td>
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<td>42</td>
<td>109.68</td>
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<td>129</td>
<td>122.92</td>
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<tr>
<td>63</td>
<td>147.21</td>
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<tr>
<td>5</td>
<td>190.30</td>
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<tr>
<td>Total</td>
<td>252</td>
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</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 3:**

H(4) = 16.570, p=0.002 *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 3:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 0.965, p=0.326
1 x 3: H(1) = 2.803, p=0.094
1 x 4: H(1) = 6.197, p=0.013 *
1 x 5: H(1) = 5.120, p=0.024 *

2 x 3: H(1) = 1.310, p=0.252
2 x 4: H(1) = 7.600, p=0.006 *
2 x 5: H(1) = 5.587, p=0.018 *

3 x 4: H(1) = 5.802, p=0.016 *
3 x 5: H(1) = 4.816, p=0.028 *

4 x 5: H(1) = 2.197, p=0.138

Item 4: To what extent do you think this type of learning platform (the voices, the graphics and the setting) would help in practicing listening comprehension?

<table>
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<th>Ranks</th>
<th>Test Statistics(^{a,b})</th>
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Attitude to Item 4

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</table>

Kruskal-Wallis Test Statistics for Item 4:

\[ H(4) = 24.368, p = 0.000 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 4:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

\[ 1 \times 2: H(1) = 4.415, p = 0.036 \]
\[ 1 \times 3: H(1) = 9.879, p = 0.002 \]
\[ 1 \times 4: H(1) = 11.666, p = 0.001 \]
\[ 1 \times 5: H(1) = 8.313, p = 0.004 \]

\[ 2 \times 3: H(1) = 3.416, p = 0.065 \]
\[ 2 \times 4: H(1) = 8.153, p = 0.004 \]
\[ 2 \times 5: H(1) = 9.201, p = 0.002 \]

\[ 3 \times 4: H(1) = 2.456, p = 0.117 \]
\[ 3 \times 5: H(1) = 6.220, p = 0.013 \]

\[ 4 \times 5: H(1) = 4.086, p = 0.043 \]

Item 5: Would you enjoy using this type of activity to develop your aural Irish skills, should be available and easily accessible in your school?

<table>
<thead>
<tr>
<th>Attitude to synthesised voices (pre-game)</th>
<th>N</th>
<th>Mean Rank</th>
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<tbody>
<tr>
<td>Item 5</td>
<td>13</td>
<td>81.62</td>
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</table>

Kruskal-Wallis Test Statistics for Item 5:

\[ H(4) = 23.513, p = 0.000 \]
Kruskal-Wallis Test Statistics for Item 5:

\[ H(4) = 23.513, p=0.000 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 5:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

\[
\begin{align*}
1 x 2: \ H(1) &= 2.032, p=0.154 \\
1 x 3: \ H(1) &= 4.590, p=0.032 * \\
1 x 4: \ H(1) &= 9.656, p=0.002 * \\
1 x 5: \ H(1) &= 7.574, p=0.006 * \\
2 x 3: \ H(1) &= 1.720, p=0.190 \\
2 x 4: \ H(1) &= 11.434, p=0.001 * \\
2 x 5: \ H(1) &= 8.639, p=0.003 * \\
3 x 4: \ H(1) &= 7.328, p=0.007 * \\
3 x 5: \ H(1) &= 6.036, p=0.014 * \\
4 x 5: \ H(1) &= 2.817, p=0.093
\end{align*}
\]

Item 6: How motivating do you find this type of activity?

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\[ a. \text{Kruskal Wallis Test} \]

\[ b. \text{Grouping Variable: Attitude to synthesised voices (pre-game)} \]
Kruskal-Wallis Test Statistics for Item 6:

H(4) = 31.689, p=0.000 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 6:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 12.524, p=0.000 *
1 x 3: H(1) = 14.274, p=0.000 *
1 x 4: H(1) = 18.057, p=0.000 *
1 x 5: H(1) = 10.738, p=0.001 *

2 x 3: H(1) = 0.076, p=0.783
2 x 4: H(1) = 3.888, p=0.049 *
2 x 5: H(1) = 11.643, p=0.001 *

3 x 4: H(1) = 3.861, p=0.049 *
3 x 5: H(1) = 10.310, p=0.001 *

4 x 5: H(1) = 8.639, p=0.003 *

Item 7: Do you think this type of activity would make the learning of Irish more attractive?

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<td>Attitude to synthesised voices (pre-game)</td>
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<td>Total</td>
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Kruskal-Wallis Test Statistics for Item 7:

H(4) = 29.489, p=0.000 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 7:
(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \( H(1) = 3.358, p=0.067 \)
1 x 3: \( H(1) = 5.904, p=0.015 \) *
1 x 4: \( H(1) = 11.694, p=0.001 \) *
1 x 5: \( H(1) = 7.601, p=0.006 \) *

2 x 3: \( H(1) = 1.304, p=0.253 \)
2 x 4: \( H(1) = 12.800, p=0.000 \) *
2 x 5: \( H(1) = 10.549, p=0.001 \) *

3 x 4: \( H(1) = 10.666, p=0.001 \) *
3 x 5: \( H(1) = 7.979, p=0.005 \) *

4 x 5: \( H(1) = 3.041, p=0.081 \) *

**Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.**

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<td>Item 9</td>
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<td>108.92</td>
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**Kruskal-Wallis Test Statistics for Item 9:**

\( H(4) = 14.174, p=0.007 \) *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 9:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \( H(1) = 0.007, p=0.933 \)
1 x 3: \( H(1) = 0.419, p=0.518 \)
1 x 4: \( H(1) = 3.146, p=0.076 \)
1 x 5: \( H(1) = 4.573, p=0.032 \) *

2 x 3: \( H(1) = 1.077, p=0.299 \)
2 x 4: \( H(1) = 7.248, p=0.007 \) *
2 x 5: \( H(1) = 5.682, p=0.017 \) *

3 x 4: \( H(1) = 5.397, p=0.020 \) *
3 x 5: \( H(1) = 5.186, p=0.023 \) *

4 x 5: \( H(1) = 4.744, p=0.029 \) *

**Item 10:** There is a good balance between enjoyment and language learning in this game.

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**Kruskal-Wallis Test Statistics for Item 10:**

\( H(4) = 11.846, p=0.019 \) *

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \( H(1) = 2.735, p=0.098 \)
1 x 3: \( H(1) = 1.398, p=0.237 \)
1 x 4: \( H(1) = 4.176, p=0.041 \) *
1 x 5: \( H(1) = 6.691, p=0.010 \) *

2 x 3: \( H(1) = 0.773, p=0.379 \)
2 x 4: \( H(1) = 0.326, p=0.568 \)
2 x 5: \( H(1) = 5.825, p=0.016 \) *
3 x 4: H(1) = 2.762, p=0.097 *
3 x 5: H(1) = 6.584, p=0.010 *
4 x 5: H(1) = 4.752, p=0.029 *

**Item 11.1:** Please give your opinion on the usefulness of producing graphics with synthesised voices in order to practice aural comprehension.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Item 11.1</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Item 11.1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
</tr>
</tbody>
</table>

### Kruskal-Wallis Test Statistics for Item 11.1:

H(4) = 31.088, p=0.000 *

### Kruskal-Wallis Test Statistics for post hoc analysis of Item 11.1:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 7.639, p=0.006 *
1 x 3: H(1) = 8.236, p=0.004 *
1 x 4: H(1) = 15.907, p=0.000 *
1 x 5: H(1) = 10.977, p=0.001 *

2 x 3: H(1) = 0.134, p=0.715
2 x 4: H(1) = 3.302, p=0.069
2 x 5: H(1) = 11.224, p=0.001 *

3 x 4: H(1) = 7.832, p=0.005 *
3 x 5: H(1) = 12.672, p=0.000 *
4 x 5: H(1) = 11.017, p=0.001 *
Item 11_2: Please give your opinion on the quality of the synthesised voices: to what extent do you think the voices are adequate for the type of learning platform presented here?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude to synthesised voices (pre-game)</td>
<td>Item 11_2</td>
</tr>
<tr>
<td>N</td>
<td>Mean Rank</td>
</tr>
<tr>
<td>----</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>42</td>
</tr>
<tr>
<td>3</td>
<td>129</td>
</tr>
<tr>
<td>4</td>
<td>63</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>252</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 11_2:**

\[ H(4) = 16.508, \ p = 0.002 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_2:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \[ H(1) = 1.026, p = 0.311 \]
1 x 3: \[ H(1) = 5.140, p = 0.023 \]
1 x 4: \[ H(1) = 6.192, p = 0.013 \]
1 x 5: \[ H(1) = 6.888, p = 0.009 \]
2 x 3: \[ H(1) = 3.403, p = 0.065 \]
2 x 4: \[ H(1) = 4.526, p = 0.033 \]
2 x 5: \[ H(1) = 7.504, p = 0.006 \]
3 x 4: \[ H(1) = 0.443, p = 0.506 \]
3 x 5: \[ H(1) = 6.457, p = 0.011 \]
4 x 5: \[ H(1) = 5.993, p = 0.014 \]

Item 11_3: Please give your opinion on the attractiveness of the voices.
<table>
<thead>
<tr>
<th>Ranks</th>
<th></th>
<th>Mean</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attitude to synthesised voices (pre-game)</td>
<td>N</td>
<td>Rank</td>
<td></td>
</tr>
<tr>
<td>Item 11_3</td>
<td>1</td>
<td>13</td>
<td>87.04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>42</td>
<td>123.98</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>129</td>
<td>121.28</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>63</td>
<td>141.87</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>191.30</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>252</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 11_3:**

\[ H(4) = 12.383, p=0.015 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_3:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

\[ 1 \times 2: H(1) = 3.021, p=0.082 \]
\[ 1 \times 3: H(1) = 2.941, p=0.086 \]
\[ 1 \times 4: H(1) = 6.736, p=0.009 \]
\[ 1 \times 5: H(1) = 3.900, p=0.048 \]
\[ 2 \times 3: H(1) = 0.055, p=0.815 \]
\[ 2 \times 4: H(1) = 1.816, p=0.178 \]
\[ 2 \times 5: H(1) = 4.125, p=0.042 \]
\[ 3 \times 4: H(1) = 3.805, p=0.051 \]
\[ 3 \times 5: H(1) = 4.409, p=0.036 \]
\[ 4 \times 5: H(1) = 3.623, p=0.057 \]
**F3: Kruskal-Wallis Test Results: Taidhgin**

Expansion of Kruskal-Wallis Test for items showing significance in Table 5.13, Chapter 5. These expansions show the mean rank scores and the direction of the differences. They also give the post hoc analysis showing where the difference lies.

**Gender**

**Item 4:** To what extent do you think this type of learning platforms (i.e. the interaction and playfulness) would help in practicing conversational Irish?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Item 4 Female</td>
<td>166</td>
</tr>
<tr>
<td>Male</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 4:**

\[ H(1)=5.143, \ p=0.023 \]

**Item 9:** The synthesised voices were sufficiently clear to make the speech intelligible.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Item 9 Female</td>
<td>166</td>
</tr>
<tr>
<td>Male</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 9:**

\[ H(1)=5.135, \ p=0.023 \]
Kruskal-Wallis Test Statistics for Item 9:

H(1)=5.135, p=0.023 *

Item 10: Did you experience particular difficulties with the dialects that are used in Taidhgin?

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>166</td>
<td>107.78</td>
</tr>
<tr>
<td>Male</td>
<td>62</td>
<td>132.50</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

- Chi-Square: 7.243
- df: 1
- Asymp. Sig.: 0.007

a. Kruskal Wallis Test
b. Grouping Variable: Gender

Kruskal-Wallis Test Statistics for Item 10:

H(1)=7.243, p=0.007 *

**Between-School Differences**

Item 3: How would you describe the movements of the talking monkey and their alignment to speech?

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>80</td>
<td>122.48</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>22</td>
<td>84.59</td>
</tr>
<tr>
<td>English</td>
<td>126</td>
<td>114.65</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

- Chi-Square: 6.562
- df: 2
- Asymp. Sig.: 0.038

a. Kruskal Wallis Test
b. Grouping Variable: School Type

Kruskal-Wallis Test Statistics for Item 3:

H(2)=6.562, p=0.038 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 3:

Gaeltacht x Gaelscoil: H(1)=6.686, p=0.010 *
Item 4: To what extent do you think this type of learning platform (i.e. the interaction and playfulness) would help in practicing conversational Irish?

Kruskal-Wallis Test Statistics for Item 4:

H(2)=17.186, p=0.000 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 4:

Gaeltacht x Gaelscoil: H(1)=1.872, p=0.171
Gaeltacht x English: H(1)=9.999, p=0.002 *
Gaelscoil x English: H(1)=11.581, p=0.001 *

Item 5: Would you use a virtual conversation partner (like the talking monkey) should it be available and easily accessible in your school?

Kruskal-Wallis Test Statistics for Item 5:

H(2)=14.895, p=0.001 *
Gaeltacht x Gaelscoil: $H(1)=3.237, p=0.072$
Gaeltacht x English: $H(1)=6.497, p=0.011^*$
Gaelscoil x English: $H(1)=11.798, p=0.001^*$

**Item 6: To what extent would you be motivated by this type of activity?**

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>80</td>
<td>112.43</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>22</td>
<td>70.75</td>
</tr>
<tr>
<td>English</td>
<td>126</td>
<td>123.45</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

- **Chi-Square**: 15.082
- **df**: 2
- **Asymp. Sig.**: 0.001

*Kruskal-Wallis Test Statistics for Item 6:*

$H(2)=15.082, p=0.001^*$

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 6:**

- Gaeltacht x Gaelscoil: $H(1)=9.045, p=0.003^*$
- Gaeltacht x English: $H(1)=1.833, p=0.176$
- Gaelscoil x English: $H(1)=14.106, p=0.000^*$

**Item 10: Did you experience particular difficulties with the dialects that are used in Taidhgin?**

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>80</td>
<td>139.76</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>22</td>
<td>104.82</td>
</tr>
<tr>
<td>English</td>
<td>126</td>
<td>100.15</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

**Test Statistics**

- **Chi-Square**: 20.754
- **df**: 2
- **Asymp. Sig.**: 0.000

*Kruskal-Wallis Test Statistics for Item 10:*

$H(2)=20.754, p=0.000^*$

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:**
Gaeltacht x Gaelscoil: $H(1)=5.671$, $p=0.017$ *
Gaeltacht x English: $H(1)=20.346$, $p=0.000$ *
Gaelscoil x English: $H(1)=0.089$, $p=0.766$

**11_3: Please give your opinion on the attractiveness of the voices.**

<table>
<thead>
<tr>
<th>School Type</th>
<th>N</th>
<th>Rank</th>
<th>Mean Item 11_3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaeltacht</td>
<td>80</td>
<td>127.78</td>
<td>6.408</td>
</tr>
<tr>
<td>Gaelscoil</td>
<td>22</td>
<td>96.82</td>
<td>2</td>
</tr>
<tr>
<td>English</td>
<td>126</td>
<td>109.16</td>
<td>0.041</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 11_3:

$H(2)=6.408$, $p=0.041$ *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_3:

Gaeltacht x Gaelscoil: $H(1)=4.653$, $p=0.031$ *
Gaeltacht x English: $H(1)=4.353$, $p=0.037$ *
Gaelscoil x English: $H(1)=0.674$, $p=0.412$

**Frequency Playing Computer Games**

**Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.**

<table>
<thead>
<tr>
<th>Frequency Playing Computer Games</th>
<th>N</th>
<th>Rank</th>
<th>Mean Item 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>47</td>
<td>103.95</td>
<td>10.558</td>
</tr>
<tr>
<td>Seldom</td>
<td>127</td>
<td>108.67</td>
<td>3</td>
</tr>
<tr>
<td>Weekly</td>
<td>37</td>
<td>138.66</td>
<td>0.014</td>
</tr>
<tr>
<td>Daily</td>
<td>17</td>
<td>134.65</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Kruskal-Wallis Test Statistics for Item 9:

\[ H(3) = 10.558, p=0.014 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 9:

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: \( H(1) = 0.153, p=0.695 \)
1 x 3: \( H(1) = 7.592, p=0.006 \)
1 x 4: \( H(1) = 3.901, p=0.048 \)
2 x 3: \( H(1) = 6.719, p=0.010 \)
2 x 4: \( H(1) = 2.679, p=0.102 \)
3 x 4: \( H(1) = 0.113, p=0.736 \)

Item 11_2: Please give your opinion on the quality of the synthesised voices: to what extent do you think the voices are adequate for the type of learning platform presented here?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Test Statistics*</th>
<th>Item 11_2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Playing Computer Games</td>
<td>N</td>
<td>Mean Rank</td>
</tr>
<tr>
<td>Never</td>
<td>47</td>
<td>91.17</td>
</tr>
<tr>
<td>Seldom</td>
<td>127</td>
<td>116.56</td>
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<tr>
<td>Weekly</td>
<td>37</td>
<td>139.27</td>
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<tr>
<td>Daily</td>
<td>17</td>
<td>109.68</td>
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<tr>
<td>Total</td>
<td>228</td>
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</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 11_2:

\[ H(3) = 15.218, p=0.002 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_2:

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

1 x 2: \( H(1) = 6.405, p=0.011 \)
1 x 3: \( H(1) = 14.595, p=0.000 \)
1 x 4: \( H(1) = 1.395, p=0.238 \)
2 x 3: \( H(1) = 4.680, p=0.031 \)
2 x 4: \( H(1) = 0.227, p=0.634 \)
3 x 4: \( H(1) = 4.184, p=0.041 \)

445
**Item 11_3:** Please give your opinion on the attractiveness of the voices.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Frequency Playing Computer Games</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 11_3</td>
<td>Never</td>
<td>47</td>
<td>95.37</td>
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<td>Seldom</td>
<td>127</td>
<td>121.02</td>
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<tr>
<td></td>
<td>Weekly</td>
<td>37</td>
<td>124.43</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td>17</td>
<td>97.06</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 11_3:**

\[ H(3) = 8.192, p=0.042 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_3:**

(Key: 1 = Never; 2 = Seldom; 3 = Weekly; 4 = Daily)

\[ 1 \times 2: H(1) = 5.765, p=0.016 \]
\[ 1 \times 3: H(1) = 4.597, p=0.032 \]
\[ 1 \times 4: H(1) = 0.019, p=0.891 \]
\[ 2 \times 3: H(1) = 0.080, p=0.777 \]
\[ 2 \times 4: H(1) = 2.258, p=0.133 \]
\[ 3 \times 4: H(1) = 2.399, p=0.121 \]

**Level of Understanding of Irish**

**Item 4:** To what extent do you think this type of learning platform (i.e. the interaction and playfulness) would help in practicing conversational Irish?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Level of understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 4</td>
<td>1 = Lowest Level</td>
<td>3</td>
<td>123.17</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>139.50</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>36</td>
<td>141.17</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>100</td>
<td>118.02</td>
</tr>
</tbody>
</table>

**Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>Item 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>14.067</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.007</td>
</tr>
</tbody>
</table>

(a) Kruskal Wallis Test
(b) Grouping Variable: Level of understanding of Irish
Kruskal-Wallis Test Statistics for Item 4:

\[ H(4) = 14.067, \ p = 0.007 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 4:

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: \( H(1) = 0.111, \ p = 0.739 \)
1 x 3: \( H(1) = 0.358, \ p = 0.549 \)
1 x 4: \( H(1) = 0.020, \ p = 0.888 \)
1 x 5: \( H(1) = 0.560, \ p = 0.454 \)

2 x 3: \( H(1) = 0.006, \ p = 0.941 \)
2 x 4: \( H(1) = 0.258, \ p = 0.612 \)
2 x 5: \( H(1) = 0.931, \ p = 0.335 \)

3 x 4: \( H(1) = 4.100, \ p = 0.043 \)
3 x 5: \( H(1) = 12.378, \ p = 0.000 \)

4 x 5: \( H(1) = 5.008, \ p = 0.025 \)

Item 5: Would you use a virtual conversation partner (like the talking monkey) should it be available and easily accessible in your school?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Mean Rank</th>
<th>Level of understanding of Irish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>129.67</td>
<td>1 = Lowest Level</td>
</tr>
<tr>
<td>2</td>
<td>99.50</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>148.21</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>119.21</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>94.97</td>
<td>5 = Highest Level</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 5:

\[ H(4) = 20.580, \ p = 0.000 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 5:
(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Level of understanding of Irish</th>
<th>N</th>
<th>Mean Rank</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 6</td>
<td>1 = Lowest Level</td>
<td>3</td>
<td>111.33</td>
<td></td>
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<tr>
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<td>2</td>
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<td>3</td>
<td>36</td>
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<td></td>
<td>4</td>
<td>100</td>
<td>115.09</td>
<td></td>
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<tr>
<td></td>
<td>5 = Highest Level</td>
<td>87</td>
<td>104.53</td>
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<tr>
<td>Total</td>
<td></td>
<td>228</td>
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</tr>
</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 6:**

\[ H(4) = 10.411, p=0.034 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 6:**

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

<table>
<thead>
<tr>
<th></th>
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<th>H(1)</th>
<th>p</th>
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<tbody>
<tr>
<td>1 x 2</td>
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<td>0.370</td>
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<td>2 x 3</td>
<td></td>
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<tr>
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<tr>
<td>3 x 4</td>
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<td>4.987</td>
<td>0.026</td>
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</table>

Item 6: To what extent would you be motivated by this type of activity?
3 x 5: $H(1) = 8.525, p=0.004^*$

4 x 5: $H(1) = 1.596, p=0.206$

**Item 10:** Did you experience particular difficulties with the dialects that are used in Taidhgin?

<table>
<thead>
<tr>
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<th>Mean Rank</th>
<th>N</th>
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<td>Lowest Level</td>
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<td>4</td>
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<td>5 = Highest Level</td>
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<td>Total</td>
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</table>

**Kruskal-Wallis Test Statistics for Item 10:**

$H(4) = 15.908, p=0.003^*$

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:**

(Key: Group 1 = Lowest level - Group 5 = Highest level of understanding of Irish)

1 x 2: $H(1) = 0.351, p=0.554$
1 x 3: $H(1) = 0.876, p=0.349$
1 x 4: $H(1) = 0.180, p=0.672$
1 x 5: $H(1) = 1.360, p=0.244$

2 x 3: $H(1) = 3.837, p=0.050$
2 x 4: $H(1) = 1.482, p=0.223$
2 x 5: $H(1) = 4.354, p=0.037^*$

3 x 4: $H(1) = 3.783, p=0.052$
3 x 5: $H(1) = 0.569, p=0.451$

4 x 5: $H(1) = 11.605, p=0.001^*$
Attitude towards Synthetic Voices

Item 1: Do you feel the graphic display (the talking monkey) is suitable for this type of game/activity?

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<th>Mean Rank</th>
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<tbody>
<tr>
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<td>2</td>
<td>116.32</td>
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<td>3</td>
<td>102.64</td>
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<td>4</td>
<td>135.99</td>
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<tr>
<td>5</td>
<td>129.00</td>
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<tr>
<td>Total</td>
<td>128.86</td>
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</table>

Kruskal-Wallis Test Statistics for Item 1:

\[ H(4) = 12.268, p=0.015 \]

Kruskal-Wallis Test Statistics for post hoc analysis of Item 1:

(Kay: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \[ H(1) = 0.228, p=0.633 \]
1 x 3: \[ H(1) = 0.019, p=0.890 \]
1 x 4: \[ H(1) = 2.075, p=0.150 \]
1 x 5: \[ H(1) = 0.215, p=0.643 \]
2 x 3: \[ H(1) = 1.693, p=0.193 \]
2 x 4: \[ H(1) = 3.011, p=0.083 \]
2 x 5: \[ H(1) = 0.085, p=0.771 \]
3 x 4: \[ H(1) = 11.809, p=0.001 \]
3 x 5: \[ H(1) = 0.410, p=0.522 \]
4 x 5: \[ H(1) = 0.054, p=0.816 \]
Item 6: To what extent would you be motivated by this type of activity?

<table>
<thead>
<tr>
<th>Attitude to Synthesised Voices (pre-game)</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = ...hate...</td>
<td>10</td>
<td>92.10</td>
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<tr>
<td>2</td>
<td>45</td>
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<tr>
<td>3</td>
<td>111</td>
<td>104.35</td>
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<tr>
<td>4</td>
<td>60</td>
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<tr>
<td>5 = ...suitable...</td>
<td>2</td>
<td>152.75</td>
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<tr>
<td>Total</td>
<td>228</td>
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</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 6:

\[ H(4) = 10.947, \ p = 0.027 \ *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 6:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \( H(1) = 2.122, \ p = 0.145 \)
1 x 3: \( H(1) = 0.406, \ p = 0.524 \)
1 x 4: \( H(1) = 3.391, \ p = 0.066 \)
1 x 5: \( H(1) = 1.775, \ p = 0.183 \)
2 x 3: \( H(1) = 2.510, \ p = 0.113 \)
2 x 4: \( H(1) = 1.081, \ p = 0.298 \)
2 x 5: \( H(1) = 0.660, \ p = 0.416 \)
3 x 4: \( H(1) = 7.938, \ p = 0.005 \ * \)
3 x 5: \( H(1) = 1.384, \ p = 0.239 \)
4 x 5: \( H(1) = 0.191, \ p = 0.662 \)
Item 8: The overall standard of the Irish used by Taidhgin is at about the right level for me.

### Ranks

<table>
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<tr>
<th>Attitude to synthesised voices (pre-game)</th>
<th>N</th>
<th>Rank</th>
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</thead>
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<td>Item 8 1 = ...hate...</td>
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<td>107.86</td>
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### Test Statistics

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<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>11.168</td>
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<td>0.025</td>
</tr>
</tbody>
</table>

#### Kruskal-Wallis Test Statistics for Item 8:

$H(4) = 11.168, p=0.025$ *

#### Kruskal-Wallis Test Statistics for post hoc analysis of Item 8:

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: $H(1) = 2.582, p=0.108$
1 x 3: $H(1) = 1.998, p=0.158$
1 x 4: $H(1) = 4.482, p=0.034$ *
1 x 5: $H(1) = 4.004, p=0.045$ *

2 x 3: $H(1) = 0.663, p=0.416$
2 x 4: $H(1) = 0.726, p=0.394$
2 x 5: $H(1) = 3.885, p=0.049$ *

3 x 4: $H(1) = 4.139, p=0.042$ *
3 x 5: $H(1) = 4.456, p=0.035$ *

4 x 5: $H(1) = 3.573, p=0.059$
Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Attitude towards synthesised voices (pre-game)</th>
<th>N</th>
<th>Mean Rank</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 9</td>
<td>1 = ...hate...</td>
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<td>99.15</td>
<td>10</td>
<td>99.15</td>
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<td>5 = ...suitable...</td>
<td>2</td>
<td>207.50</td>
<td>5</td>
<td>207.50</td>
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<td></td>
<td><strong>Total</strong></td>
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</tbody>
</table>

**Kruskal-Wallis Test Statistics for Item 9:**

\[ H(4) = 14.607, p=0.006 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 9:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \( H(1) = 0.107, p=0.744 \)
1 x 3: \( H(1) = 0.339, p=0.560 \)
1 x 4: \( H(1) = 1.892, p=0.169 \)
1 x 5: \( H(1) = 2.536, p=0.111 \)

2 x 3: \( H(1) = 0.259, p=0.611 \)
2 x 4: \( H(1) = 7.386, p=0.007 \)
2 x 5: \( H(1) = 6.447, p=0.011 \)

3 x 4: \( H(1) = 7.227, p=0.007 \)
3 x 5: \( H(1) = 5.348, p=0.021 \)

4 x 5: \( H(1) = 3.151, p=0.076 \)
Item 10: Did you experience particular difficulties with the dialects that are used in Taidhgin?

<table>
<thead>
<tr>
<th>Ranks</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitude to synthesised voices (pre-game)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 10</td>
<td>10</td>
<td>98.90</td>
</tr>
<tr>
<td>2</td>
<td>45</td>
<td>119.04</td>
</tr>
<tr>
<td>3</td>
<td>111</td>
<td>102.18</td>
</tr>
<tr>
<td>4</td>
<td>60</td>
<td>133.43</td>
</tr>
<tr>
<td>5 = ...suitable...</td>
<td>2</td>
<td>206.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

Kruskal-Wallis Test Statistics for Item 10:
H(4) = 15.347, p = 0.004 *

Kruskal-Wallis Test Statistics for post hoc analysis of Item 10:
(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: H(1) = 1.188, p = 0.276
1 x 3: H(1) = 0.032, p = 0.859
1 x 4: H(1) = 2.346, p = 0.126
1 x 5: H(1) = 3.164, p = 0.075

2 x 3: H(1) = 2.817, p = 0.093
2 x 4: H(1) = 2.094, p = 0.148
2 x 5: H(1) = 5.416, p = 0.020 *

3 x 4: H(1) = 9.367, p = 0.002 *
3 x 5: H(1) = 4.629, p = 0.031 *

4 x 5: H(1) = 3.290, p = 0.070
**Item 11_3: Please give your opinion on the attractiveness of the voices.**

<table>
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<tr>
<th>Attitude to synthesised voices (pre-game)</th>
<th>N</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = ...hate...</td>
<td>10</td>
<td>85.50</td>
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<tr>
<td>2</td>
<td>45</td>
<td>112.58</td>
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<td>3</td>
<td>111</td>
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<td>4</td>
<td>60</td>
<td>133.45</td>
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<tr>
<td>5 = ...suitable...</td>
<td>2</td>
<td>151.50</td>
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**Test Statistics**

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<th>Asymp. Sig.</th>
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<tbody>
<tr>
<td></td>
<td>10.205</td>
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<td>0.037</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Attitude to synthesised voices (pre-game)

**Kruskal-Wallis Test Statistics for Item 11_3:**

\[ H(4) = 10.205, p=0.037 \]

**Kruskal-Wallis Test Statistics for post hoc analysis of Item 11_3:**

(Key: Group 1 = ‘Hate’ synthesised voices; Group 2: ‘Tolerate’ synthesised voices but prefer human voices; Group 3: ‘neutral’, Group 4: synthesised voices ‘sometimes suitable’; Group 5: synthesised voices are ‘sometimes more suitable than human voices’)

1 x 2: \[ H(1) = 1.910, p=0.167 \]
1 x 3: \[ H(1) = 1.153, p=0.283 \]
1 x 4: \[ H(1) = 4.282, p=0.039 \] *
1 x 5: \[ H(1) = 1.814, p=0.178 \]
2 x 3: \[ H(1) = 0.308, p=0.579 \]
2 x 4: \[ H(1) = 3.306, p=0.069 \]
2 x 5: \[ H(1) = 0.986, p=0.321 \]
3 x 4: \[ H(1) = 6.903, p=0.009 \] *
3 x 5: \[ H(1) = 1.088, p=0.297 \]
4 x 5: \[ H(1) = 0.066, p=0.798 \]
Appendix G

G1: Spearman’s Rank Correlation Coefficient for Digichaint
<table>
<thead>
<tr>
<th>Item</th>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>Item 4</th>
<th>Item 5</th>
<th>Item 6</th>
<th>Item 7</th>
<th>Item 8</th>
<th>Item 9</th>
<th>Item 10</th>
<th>Item 11</th>
<th>Item 12</th>
<th>Item 13</th>
<th>Item 14</th>
<th>Item 15</th>
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<th>Item 17.1</th>
<th>Item 17.2</th>
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Yellow = Correlation is significant at the 0.01 level (2-tailed)
Green = Correlation is significant at the 0.05 level (2-tailed)
Blue = Correlation has not reached significance
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Yellow = Correlation is significant at the 0.01 level (2-tailed)
Green = Correlation is significant at the 0.05 level (2-tailed)
Blue = Correlation has not reached significance
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Yellow = Correlation is significant at the 0.01 level (2-tailed)
Green = Correlation is significant at the 0.05 level (2-tailed)
Blue = Correlation has not reached significance
Appendix H

Appendix H includes detailed item-by-item analysis of the significant results from the Kruskal-Wallis Test. It provides a parallel extended discursive presentation of the accounts in Chapter 5.9.3.3: Post-game inferential statistical results.

**H1: Digichaint Statistical Analysis**

Appendix H1 follows the structure of Chapter 5.9.3.3.2 (*Digichaint statistical analysis*). The precise values referred to below can be seen in Table 5.9 of that chapter.

**Influence of Gender**

The question of gender has significance for only one post-game item (Item 1), i.e. girls had a significantly higher opinion of the quality of the graphics in *Digichaint* \(H(1)=6.120, p=0.013^*\) than did boys (mean rank: girls = 131.96; boys: 108.21).

**Influence of Between-School Differences**

'School type' is the background factor which has the most statistically significant relationships with post-game items. It was not, however, related to 8 of the 19 post-game items - namely respondents opinions on Item 2 - the technical ease/difficulty of the game; Item 6 - clarity of the plot; Item 9 degree of focus on plot; Item 12 - intelligibility of synthesised voice; Item 15 - atmosphere created by synthetic voices; Item 16 - the suitability of the synthesised voice for *Digichaint*; Item 17_2 - adequacy of the synthesised voice for *Digichaint* or Item 17_3 - the attractiveness of the synthesised voices.

The Kruskal-Wallis test shows that there is a significant Between-School Type difference in relation to each of the Items 1, 3, 4, 5, 7, 8, 10, 11, 13, 14 and 17_1 (the precise values can be seen in Table 5.9). In order to identify the nature of these differences more fully, further Kruskal-Wallis post hoc tests were carried out for each statistically significant relationship. The results of these post hoc tests are outlined below and given in full in Appendix F1.

It is interesting to note that for 7 of the 11 items which showed significant between-school differences, pupils in Gaeltacht schools and the Gaelscoileanna form a coherent group showing no significant differences between themselves but each being significantly different from their counterparts in English-medium schools.
Item 1: Rate the graphics used in this game on a scale of 1 – 5.
English-medium schools showed a higher opinion of the quality of the graphics (mean rank: 143.83) than did pupils from the other school types (mean rank: Gaeltacht schools = 103.57; Gaelscoileanna = 99.02).

Item 3: I learned some new phrases/words/grammar points as I played the game.
English-medium schools were also more likely to have learned some new phrases/words/grammar points as they played the game (mean ranks: English schools: 144.66; Gaeltacht schools: 105.59; Gaelscoileanna: 87.44).

Item 4: The dictionary is helpful as an aid to learning Irish in this game.
Of the three school types, Gaeltacht school respondents showed a statistically significant difference from English-medium school respondents with regard to their opinion on usefulness of the dictionary as an aid to learning Irish in Digichaint ($H(1) = 26.824, p = 0.000^*$). While there was some difference between the Gaeltacht schools and the Gaelscoileanna on this item ($H(1) = 1.184, p = 0.276$) and between Gaelscoileanna and English-medium schools ($H(1) = 3.348, p = 0.067$), the difference was not statistically significant. Mean rankings for Item 4 show English schools most favourably disposed towards the usefulness of the dictionary function as an aid to learning Irish (mean rank 143.96) followed by Gaelscoileanna (mean rank: 116.72) and then Gaeltacht schools (mean rank: 98.22). This is most probably because those from Gaelscoileanna and Gaeltacht schools had no need for the facility.

Item 5: Rate your overall enjoyment of this particular game as a language learning experience.
Item 5 shows a significant difference in the relationship between each of the school types in respect of their enjoyment of Digichaint as a language learning experience (Gaeltacht schools differed significantly from Gaelscoileanna ($H(1) = 12.337, p = 0.000^*$) and from English-medium schools ($H(1) = 9.492, p = 0.002^*$) and Gaelscoileanna also differed significantly from English-medium schools ($H(1) = 23.158, p = 0.000^*$). The most favourable rating for ‘enjoyment of the game’ came from English-medium schools (mean rank: 141.95) and there was a significantly lower rating by Gaeltacht pupils (mean rank: 115.52). The opinion of Gaelscoil pupils was significantly lower than that of either of the other two groups (mean rank: 68.36).

Item 7: Was the plot credible for this type of game?
The Kruskal-Wallis test shows statistically significant differences between each of the three school types in relation to respondents' opinions on the credibility of the plot of the game (Gaeltacht x Gaelscoileanna differences: $H(1) = 5.782,$
English-medium schools show highest regard for the credibility of the plot (mean rank: 140.33), followed by Gaeltacht pupils (mean rank: 115.55), with Gaelscoil pupils believing least in its credibility (mean rank: 77.26).

**Item 8: The game held my attention.**

On Item 8 again there was a significant difference between each of the three school types (Gaeltacht x Gaelscoileanna differences: \(H(1)=10.337, p=0.001^*\); Gaeltacht x English school differences: \(H(1)=5.057, p=0.025^*\); Gaelscoil x English school differences: \(H(1)=15.674, p=0.000^*\)). The English-medium schools had the highest scores (mean rank: 138.15), followed by the Gaeltacht schools (mean rank: 119.30), who in turn had a significantly higher score than pupils in Gaelscoileanna (mean rank: 76.48).

**Item 10: There is a good balance between enjoyment and language learning in this game.**

The Kruskal-Wallis test shows a significant difference between English-medium school and Gaeltacht schools with regard to Item 10 (\(H(1)=4.589, p=0.032^*\)). English-medium schools scored highest on their opinions on the balance between enjoyment and language learning in *Digichaint* (mean ranks: English-medium school: 134.46; Gaeltacht school: 116.53; Gaelscoil: 106.52). The difference between Gaeltacht schools and Gaelscoileanna was not statistically significant (\(H(1)=0.628, p=0.428\)).

**Item 11: The overall standard of the Irish used in this game is at about the right level for me.**

Item 11 asked respondents to rate the degree to which they agreed with the statement that 'the overall standard of the Irish used in the game was at about the right level for me'. The results from the Kruskal-Wallis test show a significant difference between Gaelscoileanna and the other two school types (Gaelscoil x Gaeltacht: \(H(1)=4.299, p=0.038^*\); Gaelscoil x English-medium school: \(H(1)=7.350, p=0.007^*\)), with Gaelscoileanna having a significantly greater degree of agreement with the statement (mean ranks: Gaelscoileanna = 158.02; Gaeltacht schools = 123.62; English-medium schools = 120.82). The test results show no significant difference between Gaeltacht and English-medium schools (\(H(1)=0.072, p=0.788\)). The question asked for the degree to which pupils agreed with the statement provided. Item 11a sought to take this a step further and enquire into the reason why pupils reported that the language level was unsuitable. It asked pupils to indicate whether they found the level of Irish 'too difficult' or 'too easy'. Results from the analysis of the data produced from Item 11a indicates there is a very big difference between Gaeltacht schools and English-medium schools since the majority of Gaeltacht school responses (74%)
found the standard of Irish 'too easy' for them while the opposite held for English-medium schools, where 69% found the standard of Irish 'too difficult'. This shows an important distinction between the comprehension levels of Gaeltacht pupils and pupils in English-medium schools. A statistically significant difference appears between Gaelscoileanna and Gaeltacht schools with respondents from Gaeltacht schools more likely to think the standard of Irish was too low for them. The difference between Gaelscoileanna and English-medium schools was also significant with the English-medium schools having a significantly greater chance of reporting that the language difficulty was too high for them.

Item 13: Did you experience particular difficulties with the dialects that are used in Digichaint?
Gaeltacht schools reported significantly less difficulty in understanding the two different dialects than the English-medium schools (H(1)=5.385, p=0.020*). The difference between Gaelscoileanna and Gaeltacht schools was not statistically significant (H(1)=0.032, p=0.858). The Kruskal-Wallis test shows a mean rank of 137.81 for Gaeltacht schools: 136.04 for Gaelscoileanna and 115.99 for English-medium schools.

Item 14: I found it no more difficult to understand the computer-generated voice than I would if natural voices were used.
English-medium schools agreed most strongly that they found it no more difficult to understand the computer-generated voice than they would if natural voices were used in Digichaint. The Kruskal-Wallis test shows a mean rank of 135.13 for English schools, 116.19 for Gaeltacht schools and 103.96 for Gaelscoileanna. There was no statistically significant difference between Gaeltacht schools and Gaelscoileanna on this item (H(1)=0.809, p=0.379) whereas the difference between English-medium schools and Gaeltacht schools (H(1)=4.209, p=0.040*) and Gaelscoileanna (H(1)=4.001, p=0.045*) both reached statistical significance. This is in line with the Kang et al. (2008) observation that learners are not as sensitive to differences in naturalness between natural voices and synthetic voices as native speakers are. Those from English-medium schools approximate more closely to the "learners" in that they have less exposure to Irish.

Item 17_1: Give your opinion on the usefulness of the concept of producing an interactive language learning game in order to practice Irish.
Item 17_1 enquired into respondents' opinions on the usefulness of the concept of producing an interactive language learning game in order to practice Irish. There was no significant difference between the respondents from Gaeltacht schools and those from Gaelscoileanna (H(1)=0.773, p=0.379) and both differed significantly from the responses of the English-medium cohort (English x
Gaeltacht schools: H(1)=5.157, p=0.023* and English x Gaelscoileanna: H(1)=5.187, p=0.023*). Significantly more of the English-medium school cohort were favourably disposed towards the usefulness of the concept of this type of game for language learning for Irish (mean ranks: English-medium schools = 135.74; Gaeltacht schools = 115.49; Gaelscoileanna = 102.96).

Influence of Frequency of Playing Computer Games

Frequency of playing computer games was significantly related to only 5 of the 19 post-game items. These are Items 4, 5, 8, 10 and 12 (see Table 5.9). See Appendix F1 for the exact breakdown of the results of the Kruskal-Wallis post hoc tests.

Item 4: The dictionary is helpful as an aid to learning Irish in this game.
Post hoc analysis of Item 4 shows that only one correlation of a possible six reaches statistical significance. While there was a statistically significant difference between those who ‘seldom’ played computer games and those who played ‘weekly’, in relation to their opinions on the usefulness of a dictionary as an aid to learning Irish in the game (H(1)=7.912, p=0.005*), it would be unsafe to draw any conclusions from this difference as the numbers who play computer games weekly (20%) or daily (7%) are relatively low. The majority of respondents reported played games infrequently.

Item 5: Rate your overall enjoyment of this particular game as a language learning experience.
Item 5 shows a significant statistical relationship between the frequency with which one plays computer games and the ratings pupils give their overall enjoyment of Digichaint. The group with the highest ratings were those who ‘seldom’ played games and those with the lowest ratings for overall enjoyment were those who ‘never’ played games (mean ranks: ‘seldom play’: 136.25; ‘play daily’: 120.00; ‘play weekly’: 115.22; ‘never play’: 108.83).

Item 8: The game held my attention.
Those who reported most positively to the statement “the game held my attention” were those who played on a ‘daily’ basis and those who ‘seldom’ played games. These two groups showed no statistically significant difference between each other but both were significantly ahead of those who reported ‘never’ playing games or playing on a ‘weekly’ basis. The game was least likely to hold the attention of those who ‘never’ played (mean ranks: ‘play daily’: 148.58; ‘seldom play’: 137.44; ‘play weekly’: 107.21; ‘never play’: 103.27).
**Item 10:** There is a good balance between enjoyment and language learning in this game.

In relation to Item 10, those least likely to agree with the statement that “there is a good balance between enjoyment and language learning potential in the game” were those who ‘never’ played games. Those who played games on an occasional basis were most positive in relation to this balance (mean ranks: ‘seldom play’: 136.33; ‘play daily’: 118.00; ‘play weekly’: 116.92; ‘never play’: 107.60).

**Item 12:** The synthesised voices were sufficiently clear to make the speech intelligible.

The clarity reported on the synthetic voices was also related to respondents’ general game playing patterns. Those who ‘never’ played computer games gave the lowest ranking to the clarity of the synthetic voice while those who ‘seldom’ played gave it the highest (mean ranks: ‘seldom play’: 139.04; ‘play daily’: 114.53; ‘play weekly’: 110.48; ‘never play’: 108.10). There was a significant statistical difference between those two groups (H(1)=7.532, p=0.006*). Those who ‘seldom’ played were also statistically more positive towards the clarity of the synthetic voice than those who played ‘weekly’ (H(1)=6.763, p=0.009*).

**Influence of Level of Understanding of Irish**

In the discussion below respondents are divided into groups according to their rankings in the Likert scale. Group 1 refers to those who reported understanding ‘a few words of Irish spoken slowly’ and Group 5 being at the opposite end of the scale referring to those who understand ‘almost all conversations at natural conversation speed’. Groups 2, 3 and 4 represent the in between rankings. For detailed results of the Kruskal-Wallis post hoc tests see Appendix F1.

**Item 1:** Rate the graphics used in this game on a scale of 1 – 5.

Groups 1 and 2 consisted of only 2 and 3 respondents respectively and so for the purposes of statistical analysis they are being ignored because of such small numbers. Of the remainder, the highest ranking was given to the graphics by those rate themselves at the mid-ranking of the Likert scale – those who understand ‘parts of conversations’ in Irish (Group 3). They gave a significantly higher rating to the graphics than those who reported the ability to understand ‘almost all conversations at natural conversation speed’ (Group 5), while the relationship between Group 3 and Group 4 (understand ‘most conversations when spoken clearly’), though less pronounced, is also statistically significant. There appears to be an inverse relationship between one’s level of Irish language comprehension and the rating one gave to the graphics. Those with highest reported language comprehension level gave the lowest ranking to the quality of the graphics (mean rankings: Group 3: 156.21; Group 4: 130.32; Group 5: 108.38). One is speculating from this that those who have
the highest existing language ability show least value for this type of language teaching game because it is somewhat irrelevant to them.

**Item 3:** I learned some new phrases/words/grammar points as I played the game.
Item 3 enquired into the extent to which pupils ‘learned some new phrases/words/grammar points’ as they played the game. Respondents who saw themselves in Group 4 (understand ‘most conversations when spoken clearly’) had the highest ranking in agreeing with this statement. These were closely followed by Group 3, while Group 5 gave significantly lower level of agreement with the proposition. This is in keeping with the fact that most of those in Group 5 had language capabilities beyond the language range presented in Digichaint and therefore had little new to learn (mean rankings: Group 4: 137.50; Group 3: 136.49; Group 5: 107.44).

**Item 4:** The dictionary is helpful as an aid to learning Irish in this game.
A similar pattern to that of Item 3 arises in Item 4, which deals with the helpfulness of the dictionary function as part of Digichaint. Groups 3 and 4 had mean rankings significantly higher than those of Group 5. One may similarly conjecture that since Group 5 had a higher level of language understanding they had less use for a dictionary (mean rankings: Group 3: 145.01; Group 4: 132.52; Group 5: 108.12).

**Item 5:** Rate your overall enjoyment of this particular game as a language learning experience.
Again, we see a similar pattern in the results for Item 5, which related to the pupils’ overall enjoyment of Digichaint where the mean ranking of Group 3 was significantly higher than the mean ranking of Group 5. Group 4 occupied a midpoint between them and its mean rank score was not significantly different from either Group 3 or Group 5. Respondents’ overall enjoyment of the game would appear to be linked to their degree of satisfaction with the game and the degree to which they had learned new material (mean rankings: Group 3: 141.53; Group 4: 130.81; Group 5: 113.97).

**Item 10:** There is a good balance between enjoyment and language learning in this game.
While the Kruskal-Wallis test shows a between-group difference for Item 10, when Groups 1 and 2 are excluded, there is no longer a statistically significant difference between Groups 3, 4 and 5. The general pattern found in the previous four items still holds with Groups 3 and 4 showing a higher mean ranking than Group 5. In this case, however, the rankings fall just short of statistical significance (mean rankings: Group 3: 132.32; Group 4: 131.23; Group 5: 118.53).

**Item 13:** Did you experience particular difficulties with the dialects that are used in Digichaint?
Item 13 referred to difficulties respondents may have with the dialects that are used in Digichaint. Group 5 experienced least problems and their mean rank score for ‘lack of
difficulty' was significantly higher than those of Groups 3 and 4. The mean rankings for Group 4 were between those of Groups 3 and 5 but did not fall within the range of statistical significance from Group 3 (mean rankings: Group 5: 141.41; Group 4: 120.18; Group 3: 110.37).

Influence of Attitude towards Synthetic Voices

For the purposes of describing the statistical analysis for this factor, respondents are divided into five groups according to their responses on the Likert scale. Group 1 represents those who responded “I hate synthesised voices” while Group 5 is composed of those who responded that synthetic voices are “sometimes more suitable than human voices” in the context of computer games. Group 2 represents respondents who chose “tolerate synthesised voices but prefer human voices”; Group 3 chose “neutral” and Group 4 reported they found synthetic voices “sometimes suitable”. This may be seen as categorical data as it may be argued that the progress from 1 to 5 does not represent rank ordered categories or intensity of emotion in respect of synthetic voices generally.

The between-group differences according to the Kruskal-Wallis test were significant for Items 5, 9, 10, 12, 15, 17_1 and 17_2 (see Table 5.9) and not significant for the remaining items. See Appendix F1 for the results of the Kruskal-Wallis post hoc tests.

Item 5: Rate your overall enjoyment of this particular game as a language learning experience.

Item 5 has mean rank rankings which increase in line with one’s tolerance towards synthetic voices generally (mean rankings: Group 5: 169.40; Group 4: 146.49; Group 3: 122.16; Group 2: 118.14; Group 1: 58.92). Those who gave the lowest mean ranking for enjoyment of the game were those in Group 1, who ‘hated’ synthetic voices. There was a highly significant difference between the rankings of Group 1 and those of Groups 2, 3 and 4. Similarly, the mean rankings of Group 2 are significantly lower than those of Groups 3 and 4. (The Kruskal-Wallis test does not show a statistically significant difference between Groups 1 and 5 but one can put this down to the peculiarities of the test as it relates to two low population groups being examined alongside relatively high population groups. Inspection of the mean rankings of Groups 1 and 5 taken as part of the overall between-group differences analysis is most dramatic).

Item 9: I was more focused on the plot of the game than I was on the language being used.

While there were significant differences between Groups 2 and 3 and Groups 3 and 4 on Item 9, it is difficult to identify any clear pattern in the results. Group 3 had mean rankings significantly below those of Groups 2 and 4 (mean rankings: Group 4:
146.75; Group 2: 139.50; Group 3: 116.30; Group 5: 103.60; Group 1: 84.92). Group 4 had the top ranking which again suggests that those more positive towards the use of synthetic speech in games tended to engage with the game and focus on the plot rather than see it just as a language learning exercise.

There are a number of significant inter-relating factors which come to bear on this item which can only be examined by multivariate analysis (such as multiple regression) of a type not available in non-parametric statistics, i.e. the categories in the scale (Groups 1 – 5) may have complex inter-relationships with other background factors. Multivariate analysis of the type which would explore these interdependencies are available only for parametric data (Pallant, 2010).

Item 10: There is a good balance between enjoyment and language learning in this game.

Item 10 shows the mean ranking for the five groups to be in ascending order with Group 1 at the bottom and Group 5 at the top (mean rankings: Group 5: 151.50; Group 4: 141.52; Group 3: 126.78; Group 2: 106.91; Group 1: 90.50). Statistically there is a significant difference between Groups 2 and 4 ($\chi^2(1) = 6.897, p=0.009^*$). This follows the pattern already found for Item 5.

Item 12: The synthesised voices were sufficiently clear to make the speech intelligible.

The most dramatic results for any item analysed are those of Item 12. The mean rank scores were in ascending order in line with respondents’ attitude to synthetic speech generally (mean ranks: Group 5: 181.10; Group 4: 145.04; Group 3: 122.19; Group 2: 117.44; Group 1: 65.50). Group 1, who ‘hated’ synthetic voices, gave a very low ranking for the speech intelligibility. Their rankings were significantly lower than those of each of the other groups. Group 2 had the next highest mean rank scores but these were significantly lower than the scores of Groups 4 and 5. This result represents strong evidence that one’s judgment of particular instances of synthetic speech is highly related to one’s preconceived notions of synthetic speech gained from whatever experiences one has had in the past.

Item 15: In general, I think that computer-generated voices give a better atmosphere to computer games than natural voices do.

Item 15 deals with the proposition that “computer-generated voices give a better atmosphere to computer games than natural voices do”. It was decided that this item would be included in the post-game evaluation even if it is closely related to the background factor item on the pre-game questionnaire. The possibility here was that some respondents may have little familiarity with synthetic voices and that the experience of the game may have changed their attitude somewhat. While the pattern of the results is less clear than that of Item 12, nevertheless it is clear that those who had a positive disposition towards synthetic voices before playing Digichaint were still most favourable towards the concept that synthetic voices give a better atmosphere.
atmosphere to computer games than natural voices do. The mean rank scores of those in Group 5 were significantly higher than those of Groups 4, 3 and 2 (mean ranks: Group 5: 190.00; Group 4: 147.18; Group 2: 118.36; Group 3: 118.10; Group 1: 127.67). Group 1 showed a less negative disposition for Item 15 than was the case in the pre-game responses. Since numbers are small for this group, it would be unsafe to make any dramatic claims based on this data.

Item 17_1: Give your opinion on the usefulness of the concept of producing an interactive language learning game in order to practice Irish. The mean rankings for each group were in ascending order for this item from Group 1 to Group 5 (mean ranks: Group 5: 158.80; Group 4: 147.91; Group 3: 123.24; Group 2: 115.61; Group 1: 50.33). Those who were least favourably predisposed to synthetic voices were least favourable towards the concept of interactive language learning games, while those who were most favourably disposed to synthetic speech in general were also most favourably disposed towards interactive language learning games. Group 1 ranking was statistically significantly lower than the rankings of all other groups while the rankings of Groups 2 and 3 were significantly lower than the rankings of Group 4.

Item 17_2: Give your opinion on the quality of the synthesised voices: to what extent do you think the voices are adequate for the type of game presented here? Item 17_2 asks for the opinion on the “quality” of the particular synthetic voices used in Digichaint and their “adequacy” for the game. The same pattern as that found in previous items emerged here with the mean rank scores being in ascending order with Group 1 at the bottom and Group 5 at the top (mean ranks: Group 5: 176.50; Group 4: 145.78; Group 3: 119.45; Group 2: 122.59; Group 1: 88.67). This again showed that respondents’ predisposition towards synthetic speech seemed to colour their judgment of the quality and adequacy of the synthetic speech being used in Digichaint.
Appendix H2 follows the structure of Chapter 5.9.3.3.3 (Fáilte go TCD statistical analysis). The precise values referred to below can be seen in Table 5.11 of that chapter.

**Influence of Gender**

Gender reached the level of statistical significance for only one item in the post-game questionnaire. This is Item 10, which asks if respondents experienced "difficulty with the dialects" used in the platform. Boys reported significantly less difficulty than girls in dealing with the dialects used ($H(1)=4.107, p=0.043^*$). The mean ranks for this item were 140.58 for boys and 120.98 for girls.

**Influence of Between-School Differences**

There are significant between-school differences in six of the thirteen post-game items. These are Items 5, 7, 8, 9, 10 and 11_3 (see Table 5.11 for full details).

**Item 5: Would you enjoy using this type of activity to develop your aural Irish skills, should be available and easily accessible in your school?**

Those from English-medium schools showed a much greater enthusiasm for using *Fáilte go TCD* than did those from the two other school types (mean ranks: English-medium schools: 135.57; Gaeltacht schools: 117.98; Gaelscoileanna: 101.17). The mean rank score for the English-medium schools were significantly higher than those of the Gaelscoileanna ($p=0.031^*$). There is no significant difference between responses from the Gaelscoil and Gaeltacht school cohort ($p=0.228$).

**Item 7: Do you think this type of activity would make the learning of Irish more attractive?**

A similar trend held for the “attractiveness” of the platform as a means of learning Irish, with those from English-medium schools giving a significantly higher mean attractiveness ranking to the platform (mean ranks: English-medium schools: 135.72; Gaeltacht schools: 120.86; Gaelscoileanna: 89.63).

**Item 8: The overall standard of Irish used is at about the right level for me.**

Item 8 refers to the difficulty level of the language in the platform. There is a significant difference between the Gaelscoileanna responses and the responses from the Gaeltacht ($p=0.013^*$) and English-medium schools ($p=0.005^*$). One may refer here to the results discussed in Chapter 5.9.3.2, presented in Appendix E2, which showed 70.2% of the total group thought that the level of Irish was appropriate, and
those who did not think so were about equally divided as to whether it was too easy or too difficult. It is clear from this analysis that those who thought the level of Irish was appropriate tended to come from Gaelscoileanna, those who thought it too easy tended to come from Gaeltacht schools, and those who thought it too difficult tended to come from English-medium schools.

**Item 9:** The synthesised voices were sufficiently clear to make the speech intelligible.

Item 9, referring to “intelligibility” found a significant difference between data from Gaeltacht schools and those from English-medium schools ($H(2)=9.589, p=0.002*$). The former gave a significantly higher rating to the clarity of the speech (mean ranks: Gaeltacht schools: 144.71; Gaelscoileanna 128.24; English-medium schools 115.48). This is in line with *Digichaint* results and shows that perceived clarity of the synthetic voice is significantly related to one’s overall language ability level.

**Item 10:** Did you experience particular difficulties with the dialects that are used in the video?

This same pattern applies to Item 10, which shows those from Gaeltacht schools found less difficulty in coping with the dialects used (mean ranks: Gaeltacht schools: 144.79; Gaelscoileanna 137.13; English-medium schools 114.00).

**Item 11_3:** Please give your opinion on the attractiveness of the voices.

Students from Gaeltacht schools also found the synthetic voices more “attractive” than students from the other two school types (mean ranks: Gaeltacht schools: 144.35; Gaelscoileanna 124.98; English-medium schools: 116.21). It is interesting to note that the Gaelscoileanna mean ranking fell between the English-medium schools and Gaeltacht schools and fell short of significant statistical difference from either ($p=0.599$ and $p=0.256$ respectively). There was a statistically significant difference, however, between Gaeltacht schools and English-medium schools ($p=0.003*$).

**Influence of Frequency of Playing Computer Games**

It may be noted that *Fáilte go TCD*, as presented in this study, does not require manipulation of the figures by the player. It is not surprising, consequently, that the frequency with which respondents play computer games is significantly related to only two of the post-game questionnaire items.

**Item 1:** How would you describe your judgment of the background setting and the graphics in the video?

Frequency of playing computer games was significantly related to the respondents’ rating of the graphics in the video ($H(3)=9.928, p=0.019*$). Those who never played computer games gave the lowest ranking to the graphics (mean ranks: ‘seldom play’:
137.31; 'play weekly': 123.33; 'play daily': 115.08; 'never play': 102.92). Those who had some familiarity with playing computer games gave a significantly higher rating to the graphics than those who reported 'never' playing ($p=0.003^*$). There is no statistically significant difference between the frequencies with which one played computer games though the scores show a general tendency for those who play games sometimes, but infrequently, to give a higher ranking to the graphics. It would appear that those who play computer games very frequently have very high expectations of the standards of the graphics.

**Item 11.1:** Please give your opinion on the usefulness of producing graphics with synthesised voices in order to practice aural comprehension.

The pattern shown in Item 1 repeats itself for Item 11.1. Those who 'never' played computer games had a significantly lower opinion of the usefulness of such a platform while those who 'seldom' played gave the idea a significantly higher mean ranking (mean ranks: 'seldom play': 135.12; 'play weekly': 133.58; 'play daily': 117.25; 'never play': 98.76).

**Influence of Level of Understanding of Irish**

Level of understanding of Irish had a significant statistical relationship with eight of the thirteen items on the post-game questionnaire (see Table 5.11). This makes it a very important factor in determining one's overall evaluation of the platform. As with Digichaint, respondents are differentiated according to how they placed themselves on a Likert Scale with those with least competence on point 1 and those with highest competence on point 5.

The numbers showing low Irish ability levels (points 1 and 2 on the Likert scale) are very low and it is therefore considered inappropriate to include them in the discussion of results.

**Item 1: How would you describe your judgment of the background setting and the graphics in the video?**

In relation to Item 1, those who reported themselves as having a mid- to high range Irish ability level (Groups 3 and 4) showed the highest mean ranking for the quality of the graphics (mean ranks: Group 4: 137.77; Group 3: 135.94; Group 5: 115.40). This would appear to be related to the level of engagement one has with the platform. Those with the highest level of Irish language comprehension showed least engagement with the platform and gave a significantly lower ranking to the quality of its graphics.

**Item 3: To what extent do the movements of the characters add credibility and clarity to the conversational exchanges?**
Those who put themselves at point 4 of the Likert scale in relation to their level of understanding of Irish gave the highest mean ranking to the importance of the movements of the characters as a means of adding credibility and clarity to the conversational exchanges (mean ranks: Group 4: 139.20; Group 5: 121.97; Group 3: 115.28). Again, those at the top level (Group 5) gave a somewhat lesser mean ranking to Group 4, though the difference was not statistically different ($p=0.075$).

**Item 7: Do you think this type of activity would make the learning of Irish more attractive?**

When Groups 1 and 2 are excluded from the analysis there is no significant differences between the other three groups in relation to Item 7. There was a tendency for those in Group 5 to give a lower mean ranking to this attraction but the difference was not statistically significant (mean ranks: Group 3: 134.87; Group 4: 133.87; Group 5: 116.40).

**Item 8: The overall standard of the Irish used is at about the right level for me.**

Item 8 refers to the appropriateness of the level of Irish. When Groups 1 and 2 are excluded from the analysis there is no significant differences between the remaining three groups in their satisfaction rating with the appropriateness of the level of Irish used in the platform. The mean rank scores are: Group 5: 134.38; Group 4: 129.67; Group 3: 117.21.

**Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.**

Item 9 refers to the "intelligibility" of the synthetic speech. The mean ranking of the clarity and intelligibility of the synthetic speech is directly related to one’s Irish language ability with Group 5 giving a significantly higher ranking to the clarity and intelligibility of the speech than those in Group 3 ($p=0.004^*)$. The mean rank scores are Group 5: 139.77; Group 4: 130.96; Group 3: 103.17.

**Item 11_3: Please give you opinion on the attractiveness of the voices.**

The pattern was repeated for Item 11_3 which asked for respondents’ opinions on the attractiveness of the synthetic voices. Again Group 5 respondents gave it a significantly higher ranking than did those in Group 3 ($p=0.010^*)$. The mean rank scores are Group 5: 138.90; Group 4: 129.14; Group 3: 105.77.

**Item 10: Did you experience particular difficulties with the dialects that are used in the video?**

In relation to the dialects in the synthetic speech Group 4 experienced significantly less difficulties than did Group 3 ($p=0.019^*)$. Group 5 had less difficulties than Group 4 but this fell just short of statistical significance ($p=0.050$). This supports the general trend that the higher one’s language ability, the less difficulty they experienced with the dialects used in the platform (mean ranks: Group 5: 146.98; Group 4: 127.71; Group 3: 99.24).
Item 11_1: Please give your opinion on the usefulness of producing graphics with synthesised voices in order to practice aural comprehension.

When Groups 1 and 2 are excluded from the analysis there is no significant difference between the remaining three groups in relation to their opinions on the usefulness of a platform of this type as a means of developing aural comprehension skills. While there is a tendency for those at the top level to be less favourable towards such a platform (mean ranks: Group 3: 134.54; Group 4 132.48; Group 5: 119.43), this tendency did not reach statistical significance.

Influence of Attitude towards Synthetic Voices

Predisposition towards synthetic voices is the background factor which is most strongly related to almost all the post-game questionnaire items. There are just two items where the relationship has not reached statistical significance (Items 2 and 8). The pattern of the relationship remained constant for each of the items with mean rank scores for Group 5 (those who responded that “synthesised voices are sometimes more suitable than human voices”) higher than those for Group 4 (synthesised voices “sometimes suitable”), which in turn were higher than those for Group 3 (“neutral”), etc. The precise breakdown of these results is shown in Appendix F2.

A respondent's acceptance of the various aspects of the platform was in direct proportion to their predisposition to synthetic speech generally. Those with a negative predisposition towards the TTS synthetic voices gave a very low ranking to graphics, movement, usefulness of platform and the motivational value of the platform. They also gave a lower ranking to the quality and intelligibility of the synthetic voices as well as expressing difficulties with the dialects used. They had a low ranking for the usefulness of a platform such as this for practicing aural comprehension skills and for the quality and attractiveness of the voices. One's rank ordering of all these factors increased according to how one viewed synthetic speech as reported on the Likert scale in the pre-game questionnaire.
**H3: Taidhgin Statistical Analysis**

Appendix H3 follows the structure of Chapter 5.9.3.4 (*Taidhgin statistical analysis*) The precise values referred to below can be seen in Table 5.13 of that chapter.

**Influence of Gender**

Gender has a significant relationship with three of the thirteen post-game items. These were Items 4 ($H(1)=5.143, p=0.02^*$), 9 ($H(1)=5.135, p=0.02^*$) and 10 ($H(1)=7.243, p=0.01^*$).

**Item 4:** To what extent do you think this type of learning platforms (i.e. the interaction and playfulness) would help in practicing conversational Irish?  
Item 4 asked about the “usefulness” of this type of playful interactive platform as a help to practicing conversational Irish. The mean ranking for girls was significantly higher than that for boys, meaning that girls tended to prefer the platform to boys (mean ranks: girls: 120.00; boys: 99.78).

**Item 9:** The synthesised voices were sufficiently clear to make the speech intelligible.  
Interestingly, boys gave a significantly higher ranking to the clarity and intelligibility of the synthesised voice in Item 9 (mean ranks: boys: 129.24; girls: 108.99).

**Item 10:** Did you experience particular difficulties with the dialects that are used in *Taidhgin*?  
Boys also reported experiencing significantly less difficulty than girls in dealing with the dialects used in *Taidhgin* (mean ranks: boys: 132.50; girls: 107.78).

**Influence of Between-School Differences**

Between-school differences are significant for Items 3, 4, 5, 6, 10 and 11_3 (see Table 5.13) with no significant differences showing for the remaining items.

**Item 3:** How would you describe the movements of the talking monkey and their alignment to speech?  
Item 3 refers to respondents’ opinions of the quality of the “movements of the monkey and their alignment to speech”. Results show the mean rank scores from Gaeilgeoireanna respondents to be significantly lower than either of the other two school types (mean ranks: Gaeltacht schools: 122.48; English-medium schools: 114.65; Gaeilgeoireanna: 84.59).
Item 4: To what extent do you think this type of learning platform (i.e. the interaction and playfulness) would help in practicing conversational Irish?
Responses from pupils in Gaelscoileanna are similarly significantly less positive than English-medium schools to the question of the “usefulness of this type of platform for conversation practice”. English-medium schools gave a significantly higher mean ranking than either Gaelscoileanna \( (p=0.001*) \) or Gaeltacht schools \( (p=0.002*) \). This would suggest that pupils from English-medium schools would appreciate a virtual conversational partner because of their lack of opportunities of having a human conversational partner, unlike those from Gaelscoileanna or Gaeltacht schools.

Item 5: Would you use a virtual conversation partner (like the talking monkey) should it be available and easily accessible in your school?
This position is further supported in the responses to Item 5. Those from the English-medium schools had a significantly higher positive mean ranking than both Gaelscoileanna \( (p=0.011*) \) and Gaeltacht schools \( (p=0.001*) \). Mean rank score were English-medium schools: 126.96; Gaeltacht schools: 104.86; Gaelscoileanna: 78.16.

Item 6: To what extent would you be motivated by this type of activity?
Respondents from English-medium schools also found the platform more motivating than was the case for the other school types (mean ranks: English-medium schools: 123.45; Gaeltacht schools: 112.43; Gaelscoileanna: 70.75).

Item 10: Did you experience particular difficulties with the dialects that are used in Taidhginí?
As was the case for the results from Digichaint and Fáilte go TCD, pupils from Gaeltacht schools showed ‘less difficulty’ in understanding the dialects used, which suggests that those with a higher level of Irish language comprehension have fewer problems in dealing with dialectal variation (mean ranks: English-medium schools: 100.15; Gaelscoileanna: 104.82; Gaeltacht schools: 139.76).

Item 11_3: Please give your opinion on the attractiveness of the voices.
Pupils from Gaeltacht schools found the synthesised voices significantly more attractive than did those from the other two school types (mean ranks: Gaeltacht schools: 127.78; English-medium schools: 109.16; Gaelscoileanna: 96.82).

Influence of Frequency of Playing Computer Games

Frequency of playing computer games had a significant relationship with three post-game items, namely Items 9, 11_2 and 11_3.

Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.
Item 9 refers to the “clarity and intelligibility of the synthesised voices”. Those who reported that they ‘never’ played computer games found the synthetic voices significantly less clear and intelligible than did those who played regularly. This replicates the result got from the corresponding item in Digichaint and can be most likely seen as showing that some familiarity with gaming made the experience of dealing with Taidhgin more positive, which in turn led to greater positivity towards the synthetic voices (mean ranks: ‘play weekly’: 138.44; ‘play daily’: 134.65; ‘seldom play’: 108.67; ‘never play’: 103.95).

Item 11_2: Please give your opinion on the quality of the synthesised voices: to what extent do you think the voices are adequate for the type of learning platform presented here?
There is also greater positivity amongst more frequent computer game players towards the “adequacy of the synthesised voice” for a platform such as Taidhgin (mean ranks: ‘play weekly’: 139.27; ‘play daily’: 116.56; ‘seldom play’: 116.56; ‘never play’: 91.17).

Item 11_3: Please give your opinion on the attractiveness of the voices.
The highest mean rank scores with regard to the “attractiveness” of the voices are also from the more frequent computer game players (mean ranks: ‘play weekly’: 124.43; ‘seldom play’: 121.02; ‘play daily’: 97.06; ‘never play’: 95.37).

Influence of Level of Understanding of Irish

Level of understanding of Irish had a significant statistical relationship with Items 4, 5, 6 and 10 from the post-game questionnaire. Again, those who rated themselves at the lowest Irish language ability levels (points 1 and 2 on the Likert scale) are being excluded from the present discussion as numbers are very low and it is unsafe to draw any conclusions from this data.

Item 4: To what extent do you think this type of learning platform (i.e. the interaction and playfulness) would help in practicing conversational Irish?
Those with the highest levels of Irish were least likely to see a Taidhgin-type platform “useful” as conversational partner (mean ranks: Group 3: 141.17; Group 4: 118.02; Group 5: 98.55). These are pupils from Gaeltacht schools and Gaelscoileanna and this result is something of a duplication of the between-school type results which found that pupils from these latter school types were less enthusiastic about the platform as a virtual conversational partner.

Item 5: Would you use a virtual conversation partner (like the talking monkey) should it be available and easily accessible in your school?
Similarly, those with the highest levels of Irish felt that they would be less likely to use this type of platform as a virtual conversational partner even if it was readily available (mean ranks: Group 3: 148.21; Group 4: 119.21; Group 5: 94.97).

**Item 6: To what extent would you be motivated by this type of activity?**
The group with the highest mean rank scores for the motivational capacity of this type of platform were those who put themselves midpoint in the Likert scale of language ability (mean ranks: Group 3: 139.83; Group 4: 115.09; Group 5: 104.53). These were most likely coming from English-medium schools. The assertion that those with the highest level of Irish were least positive towards a platform such as *Taidhgin*, which was made above in respect of between-school differences, is further supported by the data from Item 6.

**Item 10: Did you experience particular difficulties with the dialects that are used in *Taidhgin*?**
Again, those with the highest language ability found least problems in dealing with the dialects used, as was the case with both other platforms (mean ranks: Group 5: 130.85; Group 3: 122.53; Group 4: 99.66).

**Influence of Attitude towards Synthetic Voices**
One’s general attitude towards synthetic voices had an influence on six of the *Taidhgin* post-game items. Significant relationships are noted in Items 1, 6, 8, 9, 10 and 11.3 (see Table 5.13). In the discussion below, Group 5 is composed of those who responded that synthetic voices are “sometimes more suitable than human voices” in the context of computer games. Group 4 respondents reported they found synthetic voices “sometimes suitable”, Group 3 chose “neutral”, Group 2 represents respondents who chose “tolerate synthesised voices but prefer human voices” and Group 1 represents those who responded “I hate synthesised voices”.

**Item 1: Do you feel the graphic display (the talking monkey) is suitable for this type of game/activity?**
The results from this item show that those with a positive predisposition towards synthetic voices were also positive about the graphics (mean ranks: Group 4: 135.99; Group 5: 129.00; Group 2: 116.32; Group 1: 105.15; Group 2: 116.32).

**Item 6: To what extent would you be motivated by this type of activity?**
Those with a positive predisposition towards synthetic voices also found that this type of virtual dialogue partner would be “motivational” for them as a study aid (mean ranks: Group 5: 152.75; Group 4: 131.48; Group 2: 120.18; Group 3: 104.35; Group 1: 92.10).

**Item 8: The overall standard of the Irish used by *Taidhgin* is at about the right level for me.**
Those with a positive predisposition towards synthetic speech were also more likely to have come from English-medium schools. They tended towards reporting that the level of Irish used in the platform was ‘suitable’ for them (mean ranks: Group 5: 205.50; Group 4: 127.62; Group 2: 116.91; Group 3: 107.86; Group 1: 80.70). This may reflect a lower difficulty level in the language used in Taidhgin compared to the other two platforms and a greater familiarity with the limited topics covered.

Item 9: The synthesised voices were sufficiently clear to make the speech intelligible.
Positive predisposition towards synthetic voices was also significantly related to judgments on the “clarity and intelligibility of the voice” in Taidhgin (mean ranks: Group 5: 207.50; Group 4: 133.98; Group 3: 108.38; Group 2: 102.90; Group 1: 99.15).

Item 10: Did you experience particular difficulties with the dialects that are used in Taidhgin?
Respondents with a positive predisposition were significantly less likely to experience “difficulty with the dialects used” (mean ranks: Group 5: 206.00; Group 4: 133.43; Group 2: 119.04; Group 3: 102.18; Group 1: 98.90).

Item 11_3: Please give your opinion on the attractiveness of the voices.
A general positive disposition was associated with a significantly stronger mean ranking on the “attractiveness” of the synthetic voice used in Taidhgin (mean ranks: Group 5: 151.50; Group 4: 133.45; Group 2: 112.58; Group 3: 106.98; Group 1: 85.50).