

Practice Makes Perfect? The Pedagogic Value of Online Independent Phonetic Transcription Practice for Speech and Language Therapy Students

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**PRACTICE MAKES PERFECT? THE PEDAGOGIC VALUE OF ONLINE INDEPENDENT
PHONETIC TRANSCRIPTION PRACTICE FOR SPEECH AND LANGUAGE THERAPY STUDENTS**

For Peer Review Only

ABSTRACT:

Accuracy of phonetic transcription is a core skill for speech and language therapists (SLTs) worldwide (Howard & Heselwood, 2002). The current study investigates the value of weekly independent online phonetic transcription tasks to support development of this skill in year one SLT students. Using a mixed methods observational design, students enrolled in a year one phonetics module completed ten weekly homework activities in phonetic transcription on a stand-alone tutorial site (WebFon (Bates, Matthews & Eagles, 2010)) and five weekly online quizzes (the 'Ulster Set' (Titterington, unpublished)). Student engagement with WebFon was measured in terms of the number of responses made to 'sparks' on the University's Virtual Learning Environment Discussion Board. Measures of phonetic transcription accuracy were obtained for the 'Ulster Set' and for a stand-alone piece of coursework at the end of the module. Qualitative feedback about experience with the online learning was gathered via questionnaire. A positive significant association was found between student engagement with WebFon and performance in the 'Ulster Set', and between performance in the 'Ulster Set' and final coursework. Students valued both online independent learning resources as each supported different learning needs. However, student compliance with WebFon was significantly lower than with the 'Ulster Set'. Motivators and inhibitors to engagement with the online resources were investigated identifying what best maximised engagement. These results indicate that while 'independent' online learning can support development of phonetic transcription skills, the activities must be carefully managed and constructively aligned to assessment providing the level of valance necessary to ensure effective engagement.

Key words: phonetic transcription, speech, phonetics, online resources, independent study

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2
3 Phonetic transcription produces....”a transcript [that] is the best attempt of a (hopefully) well-
4
5 trained listener to translate her or his perception of a speaker’s output” (Müller &
6
7 Papakyritsis, 2011, p. 953). It is a fundamental clinical skill for speech and language
8
9 therapists (SLTs) working with developmental or adult acquired speech disorders. Detailed
10
11 understanding of the client’s phonetic and phonological abilities informs differential
12
13 diagnosis and is essential for drawing up an individually tailored and evidence-based
14
15 management plan (McLeod & Baker, 2014; Howard & Heselwood, 2002).
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19 Learning to transcribe phonetically is challenging. Students have not only to learn the
20
21 symbols and diacritics used to represent the universal properties of speech, but must also
22
23 develop their own speech perception and phonological awareness skills. They need to refine
24
25 their ability to detect subtle phonetic differences between speech sounds and learn to listen
26
27 objectively (Howard & Heselwood, 2002). Vowels typically pose greater challenges than
28
29 consonants. This is because vowel systems vary more across different accents in terms of
30
31 the number of vowel phonemes present as well as the precise phonetic quality of individual
32
33 vowels, thereby placing additional demands on the student’s discriminatory powers. It is also
34
35 arguably harder to learn the IPA symbols for vowels than for consonants. The fact that there
36
37 are only five vowel letters and many more vowel sounds (e.g., twenty in the case of Southern
38
39 British Standard (SBS)) means that there are a larger number of ‘novel’ symbols to learn for
40
41 vowels. For some students, the highly irregular sound-spelling patterns for vowels can also
42
43 impede the transition from orthographic to phonetic thinking.
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48 The teaching/learning of phonetic transcription thus requires many hours of focussed
49
50 listening as well as supported opportunities to practise producing speech (Knight, 2010).
51
52 Small group working is important to provide students with tutor feedback on individual
53
54 performance (Howard & Heselwood, 2002). Carefully graded exercises are also required to
55
56 scaffold skill development and build student confidence in transcribing increasingly more
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3 complex speech data. While a minimum threshold of practice has not been identified, it is
4
5 widely acknowledged that intensive, extended transcription practice is essential (Howard &
6
7 Heselwood, 2002; Maassen, Offeringa, Vieregge & Thoonen, 1996).
8
9

10 This presents a unique pedagogical challenge, not least given large cohort sizes and
11
12 the competing demands on timetabling and resources of a diverse curriculum which make it
13
14 difficult to build-in additional tutor-led practise opportunities. Fortunately recent
15
16 pedagogical and technological developments offer a potential solution (Ashby & Ashby,
17
18 2013) accruing some support in the literature.
19
20

21
22 Research into the development of phonetic transcription skills using online methods
23
24 has considered their impact on both accuracy of phonetic transcription and the student's
25
26 perception of the experience. Two studies investigating blended learning (combining face-to-
27
28 face lectures/seminars with online activities) reported positive findings. Nissen's (2015) 60-
29
30 100 undergraduates in clinical phonetics received online learning supported by phonetic
31
32 transcription quizzes carrying a minimum pass level. He found that phonetic transcription
33
34 skills were maintained at similar levels before and after blended learning was introduced.
35
36 Knight's (2010) 30 undergraduate SLTs reported that they enjoyed online learning provided
37
38 via podcasts, reporting benefits in terms of both ease of access and increased confidence in
39
40 their final transcription coursework.
41
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45 Setter (2015) used the flipped model (providing theoretical lecture material online via
46
47 screen-casts and face-to-face workshops applying theory to practice) with under- and post-
48
49 graduate learners of phonetics in a second year English phonetics and phonology module. She
50
51 reported mixed findings: under-graduates performed better than previous groups taught using
52
53 the traditional face-to-face approach in the final transcription assessment. Post-graduates
54
55 however, presented with a more mixed pattern of results. Notably, this group contained many
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3 international students who appeared less motivated to engage with online learning, possibly
4
5 because they were more used to a tutor-led, traditional approach to pedagogy.
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7

8 Student motivation and engagement with independent online learning is an interesting
9
10 and important question. Fothergill (2008) looked at the use of podcasts with engineering
11
12 students and found that while all students perceived the podcasts as valuable, a small group
13
14 rarely listened to them because they were optional. The expectancy-value theory of
15
16 motivation as described by Biggs and Tang (2011) is orientated around how worthwhile
17
18 teaching/learning tasks appear to the student (whether of phonetics or other subjects). This
19
20 can be broken down into two broad categories of motivation: intrinsic (completion of the task
21
22 in itself is rewarding); and extrinsic (receiving some sort of external benefit for completion of
23
24 the task is rewarding). Whilst extrinsic motivation has its place, Salmon (2013) argues that its
25
26 use 'to force participation in e-activities through direct assessment of contribution [is] rarely
27
28 successful' (p.37). Ultimately, Biggs and Tang (2011) argue that the most positive form of
29
30 motivation leading to deeper learning and ownership of that learning is intrinsic.
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35 Considering the generally positive findings relating to the use of online resources in
36
37 teaching/learning of phonetic transcription, a blended learning approach has been adopted at
38
39 Ulster University (Ulster). Two online resources have been used: WebFon (Bates et al., 2010)
40
41 an existing, universally accessible resource for supporting learning and maintenance of
42
43 phonetic transcription skills (<http://elearning.marjon.ac.uk/ptsp/>); and the 'Ulster Set'
44
45 (Titterington unpublished), a series of quizzes created specifically to support development of
46
47 phonetic transcription of the Ulster vowels and accessed via the university's virtual learning
48
49 environment (VLE). Examples of the types of data and exercises used in both resources can
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51 be found in the appendix.
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PRACTICE MAKES PERFECT?

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3 The authors' experience with these online resources highlights a number of gaps in the
4 pedagogical literature that still need to be addressed. These relate to: the value of increasing
5 student practice by using online technology (considering vowels as well as consonants); and
6 the importance of student motivation for engagement/participation with independent online
7 learning opportunities. Subsequently, the overarching aim of this study is to investigate
8 whether the use of weekly independent online phonetic transcription tasks (WebFon and the
9 'Ulster Set') facilitates development of phonetic transcription skills for year one SLT students
10 at Ulster, with specific sub-aims/questions and hypotheses noted below¹:
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53 ¹ For the purposes of this study: a) engagement with WebFon refers to whether or not students
54 posted a response to weekly 'sparks' about the activity on the discussion board (DB); b)
55 performance on the 'Ulster Set' and the final transcription coursework refers to scores of
56 phonetic transcription accuracy; c) student perception refers to responses provided on a
57 questionnaire about their learning experience and: c) engagement with the 'Ulster set' refers
58 to the number of quizzes submitted.
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3 1. How are engagement with WebFon, performance on the 'Ulster Set' and the final
4 transcription coursework associated?
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7 Hypothesis: Engagement and performance will be associated with each other for these
8 measures.
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12 2. How did students perceive the independent online learning resources both as a support
13 for improving transcription accuracy and as learning resources in their own right?
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16 Hypothesis: The online independent learning resources will be valued as a support for
17 improving transcription accuracy (considering consonants and vowels) and student
18 perception will provide additional insight into this.
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23
24 3. How well did students engage with the online learning opportunities provided and
25 what factors encouraged or inhibited their engagement?
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28 Hypothesis: A combination of intrinsic and extrinsic motivation constructively aligned to
29 learning outcomes will be most motivating. Students will provide valuable insight into
30 factors influencing engagement with the online resources used.
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36 **METHOD:**

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38 **Design:**

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40 This was a mixed methods observational study of a cohort of year one SLT students at Ulster
41 University (Ulster).
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45 **Participants:**

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47 Ulster offers a 3-year undergraduate SLT degree programme situated in a rural community
48 setting with a diverse linguistic environment where many accents/dialects are spoken.
49
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52 Purposive sampling was used as all 27 students enrolled in the Linguistics for SLTs I module
53 were asked to participate. All participants were female which is representative of the
54 demographic typically found for this student cohort. They were aged 18-23 years (mean =
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3 19.48 (SD: 1.4)). No power analysis was carried out because all the students taking the
4
5 module in the first year were asked to take part. This is comparable to the sampling used by
6
7 Knight (2010) for her 1st year SLT intake (n=26/n=30 for her studies I and II respectively).
8
9 Standard processes were put in place to control for any potential ethical and confidentiality
10
11 issues pertinent to this study i.e., the fact that the chief investigator (CI) was also the
12
13 lecturer/tutor for this module. Ethical approval was obtained from the University's ethics
14
15 committee prior to rolling the study out (approval number: 15/07/16).
16
17
18

19 **Outcome Measures:**

- 20
21 • 'Ulster Set' – In order to further support development of transcription skills in
22
23 relation to Ulster vowels, six online quizzes were created using Adobe Captivate™.
24
25 The first of these is formative and the remaining 5 are summative and are
26
27 constructively-aligned with the module's learning outcomes in face-to-face sessions
28
29 (Biggs & Tang, 2011). Each quiz presents a set of 40-50 digitally recorded minimal
30
31 pairs produced by a speaker of standard Ulster English and focuses on a specific
32
33 vowel contrast presenting stimuli one word at a time. Students transcribe online using
34
35 the UCL Unicode phonetics keyboard and listen to each word as many times as they
36
37 like.
38
39 These weekly quizzes (n=5) were rolled out from the mid-point of the module and
40
41 provided a score based on accuracy of phonetic transcription i.e., a correctly
42
43 transcribed target word achieved a score of 1, and an erred transcription, a score of
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45 zero.
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49 • Engagement with WebFon – WebFon supports students' skill development by
50
51 providing hierarchically structured listening and transcription exercises combined
52
53 with immediate feedback on performance. These exercises range from Fields 1 to 3
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55 progressing from phoneme classification and auditory discrimination tasks to
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3 transcription of word lists and simulated interactions, and finally live recorded clinical
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5 speech samples at both single word and connected speech levels. Students listen,
6
7 transcribe and then check their work against indicative 'answers'.
8

9
10 At Ulster, WebFon exercises are selected to complement the content covered in class
11
12 each week and tie in with good pedagogic practice around online learning by
13
14 presenting progressively more challenging levels of transcription skill (Edirisingha,
15
16 Salmon & Nie, 2008). Students were given the option to either set up their own
17
18 learning group to work on the exercises together or complete them individually.
19

20
21 SBS is the predominant dialect/accents in WebFon which could be viewed as
22
23 potentially problematic for this student cohort. However, two key factors support the
24
25 use of this resource with these students. Firstly, students tend to be strongly
26
27 influenced by their own accent and orthography when first learning to transcribe
28
29 phonetically (Howard & Heselwood, 2002). Consequently, having to listen to and
30
31 transcribe SBS supports the development of more objective listening skills. Secondly,
32
33 since many students from Ulster will find work across the UK, the WebFon exercises
34
35 provide a valuable opportunity to develop confidence and skill transcribing a range of
36
37 accents.
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41 Accuracy of phonetic transcription could not be gauged directly for WebFon because
42
43 it is a standalone website. Therefore, the number of DB postings students made in
44
45 response to a weekly 'spark' designed to encourage reflection on the WebFon task for
46
47 that week (a total of 10 possible postings across the semester), were used as a measure
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49 of engagement. The sparks were posted by the lecturer and took the form of questions
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51 about the students' learning experience (Salmon, 2013), e.g., "How do the listening
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53 activities you have done for manner of articulation compare to the activities you have
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3 done so far for voice and place of articulation?" The lecturer weaved together,
4 summarised, and responded to students' individual responses to the 'sparks'.

5
6 This measure was ungraded i.e., it simply considered whether the student responded
7 to the 'spark' or not.
8

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- 12 • Final phonetic transcription coursework – In an invigilated session, students were
13 required to phonetically transcribe 25 words produced by a typically developing
14 preschool child (aged 3;06 yrs) presented via audio recording.
15
16 Phonetic accuracy was marked to provide a final, standalone score of transcription
17 skill.
18
 - 19 • Questionnaire responses - The questionnaire for this study focused on two key topics:
20 ease of technology use; and perceived support for learning. It comprised 19 structured
21 closed and open questions based predominantly on a Likert scale system where
22 participants were asked to make a judgement on different statements (the
23 questionnaire may be requested from the first author). Six comments boxes were also
24 provided at appropriate points throughout the questionnaire. These allowed
25 participants to elaborate on their judgements in relation to the topics covered. The
26 development of the questionnaire adhered to recommendations made by Bowling
27 (2009) and validation of it was sought by asking an expert in phonetics and a cohort
28 of second year SLT students to interpret each question and check whether their
29 interpretation aligned with those of the author using 'think-aloud' testing.
30
31 At the end of the module, students completed the questionnaire reflecting on their
32 experience with the independent online resources and their perceptions about these.
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34 This provided two types of data: quantitative rating of statements and qualitative
35 comments.
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Procedure:

The teaching and learning experience in phonetics for these students was presented as usual with the only exception being completion of the questionnaire at the end of the module. The structure of the teaching and learning for the phonetics involved: 4 hour-long weekly face-to-face sessions over 12 weeks supported by the set suite of independent learning activities. This comprised: reading to be completed for each session (weekly from week 1); online WebFon phonetic transcription exercises with associated DB activity (weekly from week 2: n=10); completion of the 'Ulster Set' weekly from week 6 (n=5); and completion of the final phonetic transcription coursework in week 12. Students filled-out the questionnaire once they had submitted their final phonetic transcription coursework.

WebFon and the 'Ulster Set' solely use auditory sound wav files. The ecological validity of this method of presentation could be questioned since listeners typically utilise visual cues to support auditory perception, and indeed this is encouraged in best practice ((UK and Ireland Child Speech Disorder Research Network, 2017). However, this approach is arguably still helpful in training focussed listening skills. It also mirrors much live transcription experience in clinical practice where it is not always possible to observe the speaker while transcribing (Knight, 2010).

The data from the 'Ulster Set', final transcription coursework, weekly postings on the DB, and on the Likert scale items from the questionnaire were coded as appropriate and inputted to SPSS vs 22. This data was cleaned and checked for outliers and normative distributions influencing subsequent use of parametric or non-parametric statistical testing as specified within the results section. The qualitative data arising from the free text responses in the questionnaire underwent thematic analysis to identify key patterns. For the purposes of this project a realist or essentialist method was adopted which focused on the students' experience

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3 and perception of the online learning resources in relation to the specific questions asked in
4
5 the questionnaire (Braun & Clarke, 2006). This process required submersion in the data
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7 followed by initial coding which was carried out separately by the research assistant and also
8
9 the first author. Once the coding was agreed, themes were identified, reviewed, again
10
11 confirmed, and finally named following the steps outlined by Braun and Clarke (2006). The
12
13 questionnaire provided both quantitative and qualitative data and this was used as appropriate
14
15 to support the data gathered from the 'Ulster Set', final phonetic transcription coursework and
16
17 weekly postings on the DB to address the research questions.
18
19

20 21 **RESULTS:**

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23 Statistical and descriptive analyses were carried out to investigate the key questions of
24
25 interest arising from the overarching aim for this study. This was to evaluate the use of
26
27 weekly independent online phonetic transcription tasks in facilitating development of
28
29 phonetic transcription skills for the year one SLT students at Ulster University. Its subsidiary
30
31 questions and subsequent statistical/descriptive analyses are addressed below:
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- 34
35 1) How are engagement with WebFon, performance on the 'Ulster Set' and the final
36
37 transcription coursework associated?
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41 A correlational analysis was carried out between the mean postings on the DB ($M = 88.15\%$,
42
43 $SD = 15.7\%$) and mean scores on the 'Ulster Set' ($M = 59.08\%$, $SD = 9.91\%$) to establish
44
45 whether an increased level of engagement with WebFon, as measured by the number of
46
47 responses posted on the DB, was associated with better scores on the 'Ulster Set'. The data
48
49 cleaning process revealed one outlier in relation to the DB postings. This was a student who
50
51 posted on the DB three times as compared with the average group posting of 8.8 out of 10.
52
53 She performed within the low average range on the other measures: 44% on the 'Ulster Set'
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55 compared with a group mean of 59%; and 61% on the final coursework compared to a group
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3 mean of 65%. As Pallant (2016) notes, inclusion of outliers can dramatically impact the
4
5 results of a correlational analysis, weakening the relationship between variables. This student
6
7 was therefore excluded from the analysis. While statistical significance was low, a
8
9 Spearman's Rho correlation ($\rho = .44, p = .03$ ($n=26$)) indicated that the more students
10
11 appeared to engage with the WebFon activities, the better they did on the 'Ulster Set'. (see
12
13 figure 1).
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17 *Insert figure 1 about here*
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20 Further correlational analysis was carried out to establish whether there was an association
21
22 between performance on the weekly online tasks and scores on the final transcription
23
24 coursework, this showed a low statistically significant association between the mean scores
25
26 on the 'Ulster Set' and scores on the final coursework indicating that students who did better
27
28 on the 'Ulster Set' also did better on the final coursework (Pearson's $r = .48, p = .01$, figure 2).
29
30 To safeguard against overestimating the relationship between these two measures, one outlier
31
32 who did substantially better on the coursework than the rest of the cohort was excluded from
33
34 this analysis ($n=26$) (again following Pallant (2016)). There was no association between the
35
36 total number of postings in response to the WebFon 'sparks' and transcription scores for the
37
38 final coursework (Spearman's $\rho = -.01, p = .96$) (with the outlier who responded rarely to
39
40 the 'sparks' and the other outlier who scored highly in the coursework removed ($n=25$)).
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45 *Insert figure 2 about here*
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50 2) How did students perceive the online independent learning resources both as a support for
51
52 improving transcription accuracy and as learning resources in their own right?
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55 Students were asked to rate their agreement (from 1-4 where 1 = significantly disagree and 4
56
57 = significantly agree) with the following question which was asked in relation to the 'Ulster
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3 Set' and Webfon, separately: *What is your attitude to the possibility that the 'Ulster*
4
5 *Set'/WebFon improves performance on the final piece of coursework?* The majority agreed
6
7 that the 'Ulster Set' (mean = 3.3 (SD: .78)) and WebFon (mean = 3.4 (SD: .57)) improved
8
9 performance. Students also rated how much they felt the online learning resources supported
10
11 the development of their transcription skills generally e.g. in response to the question: *What is*
12
13 *your attitude to how WebFon influenced the development of your phonetic transcription*
14
15 *skills?* Table 1 below shows the mean ratings and standard deviations for each aspect of
16
17 online learning investigated. This clearly shows that both online independent learning
18
19 opportunities were perceived as having been helpful.
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23 *Insert table 1 about here*
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25
26 Analysis of the students' comments revealed 5 themes when considering perceived support of
27
28 the 'Ulster Set' for both the final coursework and the development of phonetic transcription
29
30 skills generally (see table 2). The focus on Ulster vowels and support for final coursework
31
32 appeared to be most valuable. Interestingly although students clearly valued the 'Ulster Set'
33
34 in supporting transcription of vowels, this was still perceived to be a challenge by many
35
36 students despite the increased practice opportunities provided (~300 minimal pairs over the
37
38 course of the module): *"I still find vowels tricky"*. The theme that the work for the 'Ulster
39
40 Set' did not support the final coursework because it focussed on a different dialect/accent
41
42 reflects the student's focus on assessment and lack of understanding of the module learning
43
44 outcomes: to develop and improve phonetic transcription skills.
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49 *Insert table 2 about here*
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52 When considering the qualitative comments on the perceived support of WebFon for both the
53
54 final coursework and the development of phonetic transcription skills in general, a further 5
55
56 key themes emerged (see table 3). Here the students mostly valued the range of exercises,
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3 and opportunities provided by WebFon to transcribe different dialects and clinical speech
4
5 data.

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8 *Insert table 3 about here*
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11 3) How well did students engage with the online learning opportunities provided and what
12
13 factors encouraged or inhibited their engagement?

14
15 100% of the cohort submitted all the weekly online quizzes for the 'Ulster set' while the
16
17 mean response rate for postings to the 'sparks' on the DB was 88.15% (SD: 15.7%)
18
19 indicating a lower level of engagement with WebFon. A Wilcoxon Signed Rank Test showed
20
21 the difference between the mean postings and mean quiz submissions to be significant ($p \geq$
22
23 .001 at a significance level of .05).
24
25

26
27 a. Engagement with and perception of WebFon:

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29 *Did students use WebFon to increase transcription practice in preparation for each quiz in*
30
31 *the 'Ulster Set'?*
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33
34 The students were asked to rate their response to the following question: *What is your*
35
36 *attitude to how the 'Ulster Set' impacted on the amount of practice you did on WebFon? I*
37
38 *practised on WebFonwhere more = 5 and less = 1. While one student practised less, 13*
39
40 *(48%) of the students indicated that having to complete the weekly quizzes did not impact on*
41
42 *their completion of the WebFon exercises and 13 (48%) indicated that it made them practise*
43
44 *more. The qualitative comments showed that 10 (37%) of the students felt that as the*
45
46 *WebFon and 'Ulster Set' were both set homeworks, they should both be completed. Only 1*
47
48 *student said that it made her engage with WebFon less. Interestingly, 4 (15%) noted that how*
49
50 *they did on the weekly tests influenced the amount of subsequent practice completed on*
51
52 *WebFon (producing an effect in the opposite direction predicted, i.e. the quizzes triggered*
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54 *reactive, rather than proactive engagement with WebFon).*
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3 *What were the motivating factors influencing engagement with WebFon?*

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6 The students provided a binary response to a set of possible factors influencing transcription
7
8 practice on WebFon, where 1 = yes and 0 = no. Consequently, the positive responses for each
9
10 factor were summed and the results are presented in Figure 3. As can be seen for this cohort
11
12 of students, having to post comments on the DB was the biggest motivator to complete the
13
14 online WebFon activities (n=21 (78%)). This was followed by: the need to practise for the
15
16 ‘Ulster Set’ (n=11 (41%)); working in a small group with others (n=10 (37%)); or
17
18 alternatively, also being able to work on one’s own (n=8 (30%)). Input from the lecturer on
19
20 the DB (n=6 (22%)) was the least motivating factor apart from ‘other’ reasons. Only 4 (15%)
21
22 chose ‘other’, and the key theme arising from their comments was that having to prepare for
23
24 the final coursework was a good motivator for them to complete practice on WebFon.
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29 *Insert figure 3 about here*

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31 *What were the inhibiting factors influencing engagement with WebFon?*

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33
34 When considering the factors that inhibited students from engaging with Webfon, the
35
36 summed responses shown in figure 4 indicate that pressures from other 1st year modules had
37
38 the biggest impact (n=22 (81%)). Social commitments also featured as a strong inhibitor to
39
40 completing the Webfon practice (n=10 (37%)). Work commitments and the need to practise
41
42 for the ‘Ulster Set’ had a minimal impact on practice (n = 4 (15%)). Three students (11%)
43
44 selected ‘other’ as a reason inhibiting their practice on Webfon and the key theme emerging
45
46 from their comments was to do with difficulties getting the work done within the set time
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48 constraints.
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54 *Insert figure 4 about here*

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57 b. Ease of access for WebFon and the ‘Ulster Set’:
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3 Students rated the ease with which they could access and complete WebFon activities from 1
4 (impossible) to 4 (totally easy). The access for each weekly session (mean = 3.67 (SD: .48));
5 technical completion of each set of exercises (mean = 3.59 (SD: .5); and remote access (mean
6 = 3.54 (SD: .51) were all perceived as being mostly easy.
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12 In order to complete the 'Ulster Set' students had to download and use the UCL Unicode
13 phonetic transcription font keyboard. They rated this as being mostly difficult (mean = 2.33
14 (SD: .73)) with some students finding it impossible (n=2). Opening the quizzes in the VLE
15 (mean = 3.67 (SD: .48)); technically completing these (mean = 3.44 (SD: .51)); and
16 submitting each completed quiz (mean = 3.37 (SD: .63)) were reported as being mostly easy,
17 although two students experienced difficulty submitting the quizzes.
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26 Three key themes were apparent in the qualitative comments the students made about the
27 technical aspects of using each online resource. Firstly, in relation to the Ulster Set, 6
28 students (22%) had difficulty downloading the UCL Unicode phonetic font keyboard. This
29 reflected problems with the font system interfacing with the operating system of Apple
30 technology which many of the cohort were using. Consequently some students had to
31 borrow a lap top/pc with a windows operating system to complete the quizzes. Secondly,
32 also in relation to the Ulster Set, 5 students (19%) had difficulty saving/submitting the tests
33 and this appeared to be due to issues with a weak and intermittent wireless internet system
34 within zones of the University campus. Thirdly, in relation to WebFon, 3 (11%) of the
35 students commented that presentation of the stimuli in the Field 2 and Field 3 within one
36 sound wav file made it difficult to play back individual words. However, more positively,
37 4 (15%) of the students reported that WebFon worked well and that both WebFon and the
38 'Ulster Set' were easy to navigate.
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55 56 **DISCUSSION** 57 58 59 60

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3 This study's overarching aim was to investigate whether the use of weekly independent
4
5 online phonetic transcription tasks facilitated development of phonetic transcription skills for
6
7 year one SLT students at Ulster University. The students participating in the study perceived
8
9 both WebFon and the 'Ulster Set' as having been helpful in the development of their
10
11 phonetic transcription skills generally and also as having positively contributed towards their
12
13 performance in the final transcription coursework. Participants who engaged more with the
14
15 WebFon activities, performed better in the 'Ulster Set' quizzes and those who performed
16
17 better in the 'Ulster Set' quizzes also performed better in the final transcription coursework.
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19 However, engagement with WebFon did not appear to be related to performance on the final
20
21 coursework for this cohort.
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26 What do these results mean? The first important point to make is about the measure
27
28 that was used to evaluate engagement with WebFon. Since WebFon is a stand-alone,
29
30 universally accessible resource, student engagement with it could only be monitored
31
32 indirectly through students' responses to weekly 'sparks' about the set activities. Clearly, this
33
34 measure does not provide information about how accurately students transcribed each of the
35
36 homework activities. Furthermore, it is entirely possible that some students may have
37
38 completed the WebFon homework activities without posting on the DB while others may
39
40 have posted on the DB without having completed the activities. Thus, the lack of a positive
41
42 association between engagement with WebFon and performance in the final coursework may
43
44 reflect limitations in the measure used to evaluate engagement with this online resource.
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47 Despite these limitations, the significant associations found between level of engagement
48
49 with WebFon and performance in the 'Ulster Set' and between performance in the 'Ulster
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51 Set' and the final coursework support the view that increasing hours of practice improves
52
53 phonetic transcription skills (Howard & Heselwood, 2002) and accord with findings reported
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55 in previous studies (e.g., Nissen, 2015; Setter, 2015).
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3 This study also lends weight to the view that motivation to engage with online
4 material is key to its successful use. As noted above, Biggs and Tang (2011) discuss different
5 types of motivation for learning, considering both intrinsic and extrinsic motivation. Almost
6 half the participants in this study reported that they completed the homework tasks for both
7 online resources because they were asked to, i.e., they required extrinsic motivation to do so!
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14 Notably, engagement with the 'Ulster Set' was 100% suggesting that their
15 contribution to the overall summative assessment for the module provided 'über' extrinsic
16 motivation to the individual. In contrast, even though responding to 'sparks' on the weekly
17 WebFon activities was also an extrinsic (albeit social) motivator, the fact that this activity
18 was not embedded within the summative assessment for the module meant that it was more
19 likely to be perceived as an optional activity.² Indeed, the reduced level of engagement with
20 WebFon (88%) compared with the 'Ulster Set' (100%) occurred despite students perceiving
21 both as being valuable resources i.e., intrinsically rewarding. Students did not report that the
22 extrinsic motivation driving completion of the 'Ulster Set' was due to competition amongst
23 the cohort that can arise when a mark is awarded for work (achievement oriented) but rather,
24 appeared motivated to spend time on the 'Ulster Set' as an investment in their final
25 coursework mark. This seems to counter Salmon's (2013) suggestion that linking online
26 learning opportunities to summative assessment can be counterproductive. However, it is
27 possible that what is necessary to support independent work online is for students to reach a
28 threshold of valance by providing intrinsic motivation combined with extrinsic motivation
29 involving a reward in relation to final marks. This is an important point to consider when
30 supplementing direct face-to-face, with online pedagogy in this area. The current results
31 suggest that many of the intrinsically motivating online resources one might choose such as
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55 ² It is important to note that overall engagement with the DB postings for WebFon was
56 relatively high across the semester with a key drop in week 4 and the penultimate week of the
57 semester (both possibly related to assessment requirements in other modules). There was
58 only one student who rarely posted on the DB (3 out of 10 postings).
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3 WebFon or, for example, Seeing Speech (Lawson, Stuart-Smith, Scobbie, & Nakai, 2015),
4
5 would need to be constructively aligned to the module's summative assessment (in some
6
7 manner) to ensure that students engage with, and therefore benefit from the additional
8
9 practice opportunities provided.
10

11
12 Having to post a response on the DB following completion of weekly WebFon tasks
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14 was found to be the most influential of all the extrinsic motivators for engaging with
15
16 WebFon. However, there were other motivators for student engagement with both resources.
17
18 Having to practise for the weekly quizzes, and working in small groups also provided an
19
20 element of extrinsic motivation for completion of WebFon tasks for some students. Indeed,
21
22 as Goldfinch and Hughes (2007) have shown, small group working can be valuable not only
23
24 for supporting the development of study skills but also in providing emotional support and
25
26 building friendships, particularly important for students coming into the University under the
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28 Widening Participation agenda (as many of Ulster's students do).
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34 Interestingly some students also found working on their own for the Webfon activities
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36 motivating. It is possible that these students were more intrinsically motivated than the
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38 students who enjoyed working in a small group. However, it is also possible that they found
39
40 working independently easier to organise and/or less threatening. Given these differences in
41
42 student preference, it is clearly important to give students the option to select the context
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44 most likely to support them in achieving the study goals. Having to complete the weekly
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46 quizzes motivated approximately half the group to engage with more preparatory practice on
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48 WebFon. Conversely, some students felt that doing poorly on the quizzes motivated them to
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50 practice more on WebFon. To that end (as many students noted) it is beneficial to have a
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52 resource such as WebFon that is more flexible and easily accessible than the weekly set
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54 quizzes which students can only access once and at a set time each week.
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3 WebFon offers many different learning experiences ranging from step-by-step
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5 exercises focussing on ear training and phoneme classification to more advanced
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7 transcription practice using samples of immature and disordered speech collected from
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9 speakers of different regional accent systems. All these aspects and the fact that WebFon was
10
11 easily accessible at any time were highly prized by students. On the other hand, the 'Ulster
12
13 Set' provided stimuli with a focus on the regional accent system most relevant for their
14
15 future clinical placements. It also provided weekly, measurable progress with immediate
16
17 feedback which the students appreciated. Students all reported that they felt both online
18
19 resources were very helpful and increased their confidence in transcription, tying in with
20
21 Knight's (2010) findings. In sum, it seems that each online resource addressed overlapping
22
23 but also different learning needs for this cohort, and each was perceived as being valuable.
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29 There were, however, some factors that impacted negatively on motivation to
30
31 complete the WebFon tasks. These were workload pressures from other modules and social
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33 commitments. This module takes place in the first semester of year one and consequently
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35 many students are coping with the progression from absolute to epistemological knowledge
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37 associated with the transition into higher education (Moon, 2005). In addition, many
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39 students are experiencing living independently for the first time and learning how to balance
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41 study with the range of social opportunities on offer. While pastoral care and pedagogic
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43 support can help students through this transitional stage, it is also important to ensure that
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45 expectations of independent learning for students are sensible and manageable within the
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47 context of their overall workload in this first semester.
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52 A further point to consider is the ease of use of online learning resources from a
53
54 technical point of view since any difficulties accessing or navigating the resources are likely
55
56 to negatively impact student engagement. While students reported WebFon as being easy to
57
58 use, there were some technical issues with the 'Ulster Set'. To this end, it is important when
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3 creating, rolling out and managing online learning resources to ensure that systems are user-
4
5 friendly and compatible with current IT trends and needs. The importance of ‘future
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7 proofing’ in terms of design and maintenance of online resources also cannot be
8
9 overestimated, particularly given the cost implications when considering: tutor time;
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11 supporting ease of access; sustainability with changing technology; and compatibility issues
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13 with phonetic font systems. In view of this, it is important that universities consider ring-
14
15 fencing funds to support the important and ongoing work of ensuring online
16
17 teaching/learning resources are fit for purpose.
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21 A final point worthy of discussion relates to the second research objective and
22
23 concerns vowel transcription. The additional practice opportunities in transcribing vowels,
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25 within and across accent systems, provided by both resources, and the particular focus of the
26
27 ‘Ulster Set’ on the local vowel system were perceived by students as being particularly
28
29 valuable. However, despite the additional practice, some students reported that they still
30
31 found vowels ‘tricky’. That students should find vowels more difficult to transcribe than
32
33 consonants is perhaps not surprising given the challenges posed, most notably, by accent
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35 differences. The issue of accent variation means that there is a greater risk of students
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37 confusing difference with disorder. In view of this, it is likely that in order to develop desired
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39 levels of confidence and skill, students require more practice transcribing vowels than
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41 consonants. It is also particularly important that students are given opportunities to transcribe
42
43 vowels produced by speakers with different accents.
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49 This study has several limitations which should be acknowledged and which highlight
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51 areas to address in future research. Firstly, there was no control group. We therefore cannot
52
53 be sure that students would not have attained the same level of transcription ability as
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55 demonstrated by their performance in the final coursework had they not had access to the
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57 additional online learning opportunities offered by WebFon and the ‘Ulster Set’.
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3 Furthermore, we do not know the extent to which students may have accessed other online
4 transcription resources. Finally, as previously discussed, the number of DB postings gives
5 only a gross measure of student engagement with WebFon. Further investigation into the
6 value of WebFon in supporting phonetic transcription skill development should incorporate
7 activities designed to measure transcription ability in relation to the focus of each weekly
8 activity.
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16 17 **CONCLUSION**

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19 The ability to produce a reliable and ethically transparent record of a client's speech output
20 (Rahilly, 2011) is a fundamental skill for SLTs worldwide. Like any specialist practical skill,
21 its development requires a considerable investment in time and practise. While independent
22 online learning has great potential to increase these opportunities, the term 'independent' in
23 this context is a misnomer insofar as students appear to require a return on their investment.
24 Thus, provision of independent online learning opportunities must be carefully aligned with
25 learning outcomes and assessment (considering both intrinsic and extrinsic motivation), in
26 order to reach a threshold of valance that will maximise engagement and student benefit.
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38 **ACKNOWLEDGEMENTS**

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42 roll out and analysis; David Pettigrew for technical support developing the 'Ulster Set'; Dr
43 Joan Rahilly for reviewing reliability of transcriptions for the 'Ulster set'; Dr Helen Irvine for
44 guidance on statistics; the Ulster speaker who contributed data for the 'Ulster set'.
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53 **DECLARATIONS OF INTEREST**

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55
56 In accordance with Taylor & Francis policy and our ethical obligations as researchers, we are
57 reporting that: the Garfield Weston Trust supported this study with a small grant although the
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Trust has neither been involved in, nor stands to benefit from this research; Sally Bates was a co-author in the development of the WebFon resource. She does not stand to benefit from this study but may make some improvements to WebFon as a consequence of findings. We have disclosed these interests fully to Taylor & Francis, and have in place an approved plan for managing any potential conflicts arising from these involvements.

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APPENDIX

'Ulster Set'

Examples of some of the vowel contrasts included in the quizzes for the 'Ulster Set' are shown below. The quizzes start off using monophthongs, progressing to diphthongs:

Front versus back, and high versus low vowels – monophthongs

Lead/lid/lad/led [lid] [lɪd] [lad] [lɛd]

Boot/bought [bʊt] [bɔt]

Should/shod [ʃʊd] [ʃɒd]

Multisyllables with Schwa

Banana [bə'nənə]

Direction [dɪ'rekʃən]

r-controlled vowels including the diphthongs [iə], [eə] and [ɔə]

Beard/bard [biəd] [bɔrd]

Core/car [kɔr] [kɑr]

Stair/star [stɛər] [stɑr] (of course in Ulster dialect you may also have [stɜr] for [stɛər] but the speaker used the first variety in this instance)

[ɒʊ] vs monophthongs

House/hiss [hɒʊs] [hɪs]

Stout/stat [stɒʊt] [stat]

[ɔi] vs monophthongs

Boy/bee [bɔi] [bi]

Moist/must [mɔist] [mʌst]

[iə] vs monophthong

PRACTICE MAKES PERFECT?

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1
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3 Wait/wit [wiət] [wɪt]

4 Kate/cut [kiət] [kʌt]

6
7 **[oə] vs monophthong**

8 Bone/bean [boən] [bɪn]

9 Sew/see [soə] [si]

11
12 **[ai] vs monophthong**

13 Bye/bee [bai] [bi]

14 Chime/chum [tʃaɪm] [tʃʌm]

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For Peer Review Only

WebFon

Examples of the weekly WebFon discussion board questions with associated exercises (and answers) are shown below:

Field 1

How do the listening activities for manner of articulation compare to the activities you have done so far for voice and POA?

The activity asks students to listen and decide on the manner of articulation of the initial, medial or final segment, e.g., is the onset a plosive, fricative or affricate. They have previously completed discrimination activities for POA and voicing.

Fricative [ʃət] Affricate [tʃək] Plosive [tək] Plosive [pɔɜ] Fricative [sɔp]

What do you think is easiest for you to transcribe so far: POA, manner, voicing or vowels and what do you think is the reason for that?

The activity asks students to listen and decide whether the vowels are long or short before transcribing each word. They have previously completed discrimination activities for POA, manner and voicing:

Short [had] Long [hɜd] Short [hɪd] Long [hid]

Field 2

What was it like transcribing speech that doesn't match the adult target for 'Emily'?

The activity asks students to transcribe single words produced by an adult with typical speech. These data are based on responses to a picture naming task by Emily (pseudonym) (CA: 4;8 yrs – Southern British Standard):

HOUSE – [haʊ] SUN – [tʌn] SKY – [daɪ] GREEN – [din] FLOWER – [paʊə] SMOKE – [məʊk]

Field 3

How did you find transcribing a real child's speech this week compared to an adult producing the child's data?

The activity asks students to transcribe single words produced by 'Colin' (pseudonym) (CA: 5;10 yrs – Southern British Standard) who presents with a speech sound disorder:

A SANDWICH [ə sɛnwig] ICE-CREAM [arkim] A SAUSAGE [ən ʒpɜg]

PRACTICE MAKES PERFECT?

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CAPTIONS FOR FIGURES AND TABLES:

Figure 1. Associations between postings to the WebFon ‘sparks’ and scores on the weekly ‘Ulster set’
(n=26)

Figure 2. Correlation between scores on the ‘Ulster set’ and scores on the final transcription
coursework (n=26)

Figure 3. Motivators for completing practice on WebFon

Figure 4. Inhibitors to completion of practice on WebFon

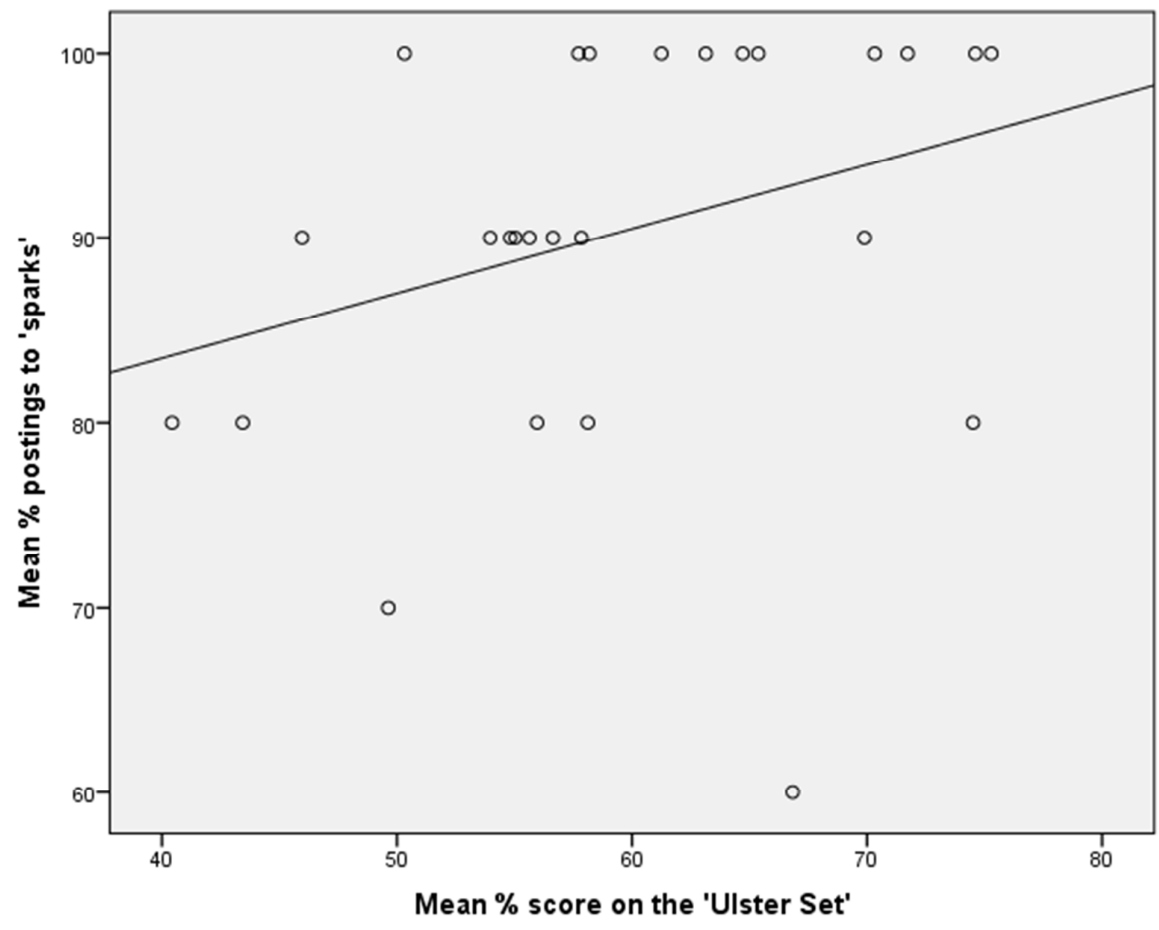
Table 1: Student perception of all online learning opportunities (1 = not helpful, 2 = a little helpful, 3
= moderately helpful, 4 = significantly helpful)

Table 2: Key themes on perceived support of the ‘Ulster Set’ for both the final coursework and
development of phonetic transcription skills in general

Table 3: Key themes on perceived support of WebFon for both the final coursework and development
of phonetic transcription skills in general

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Figure 1. Associations between postings to the WebFon 'sparks' and scores on the weekly 'Ulster Set'
(n=26)



Only

Figure 2. Correlation between scores on the 'Ulster Set' and scores on the final transcription coursework (n=26)

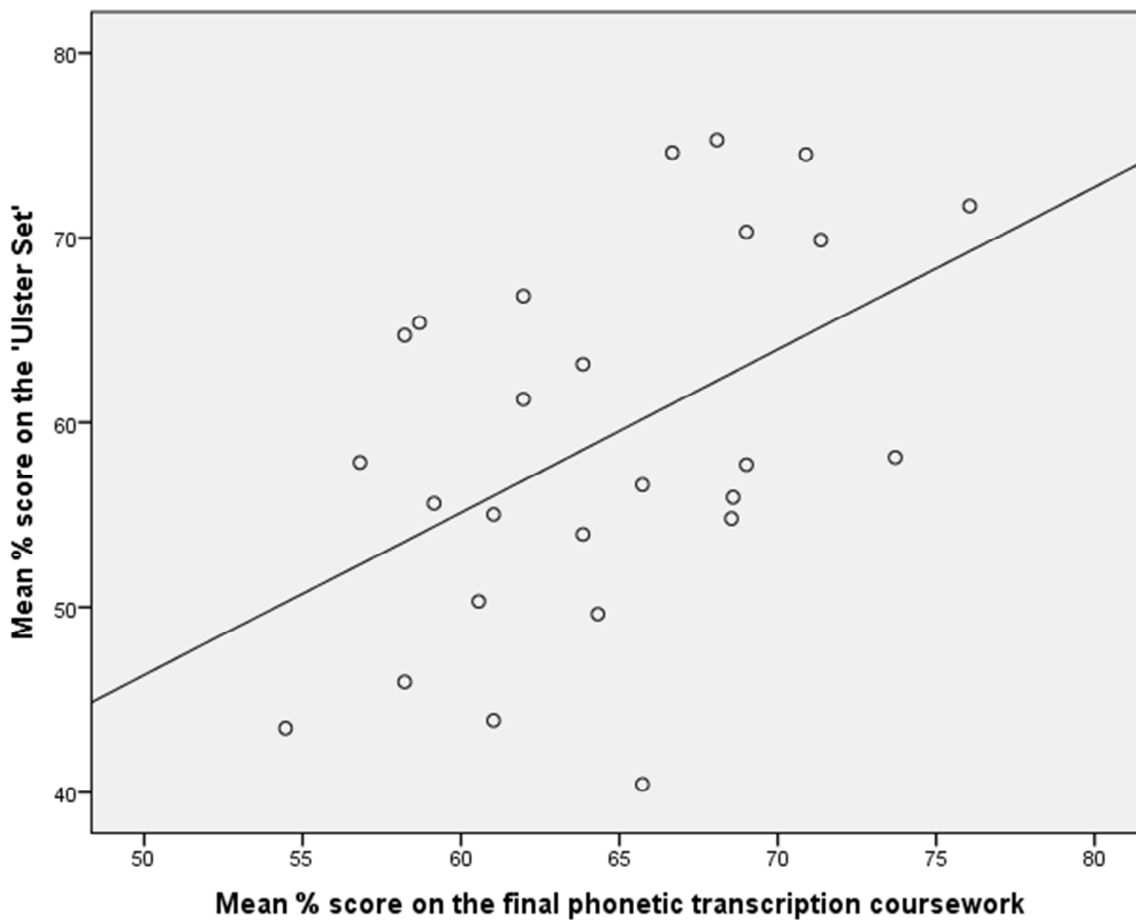
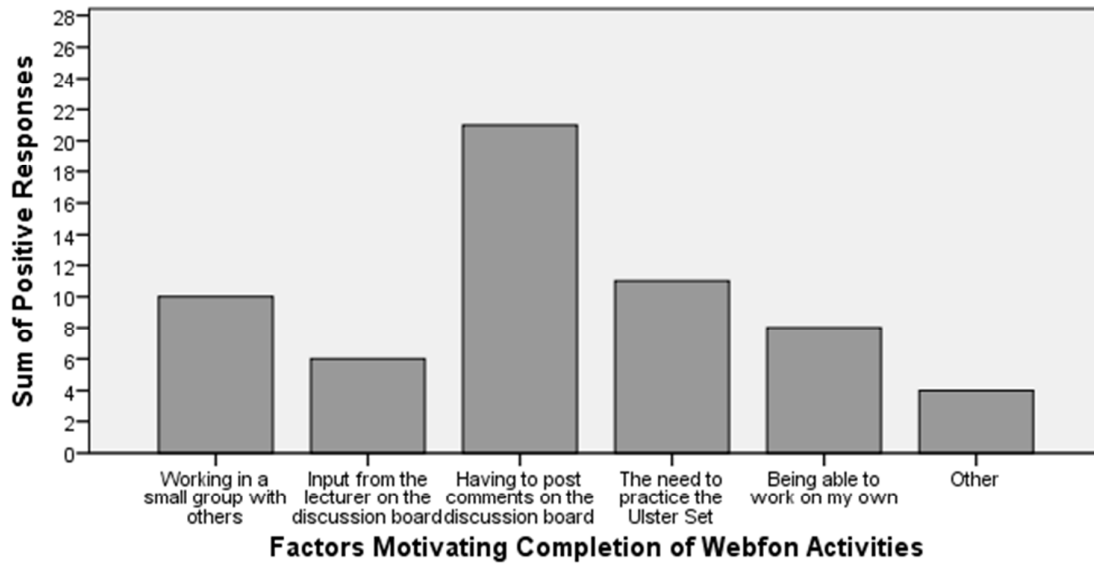
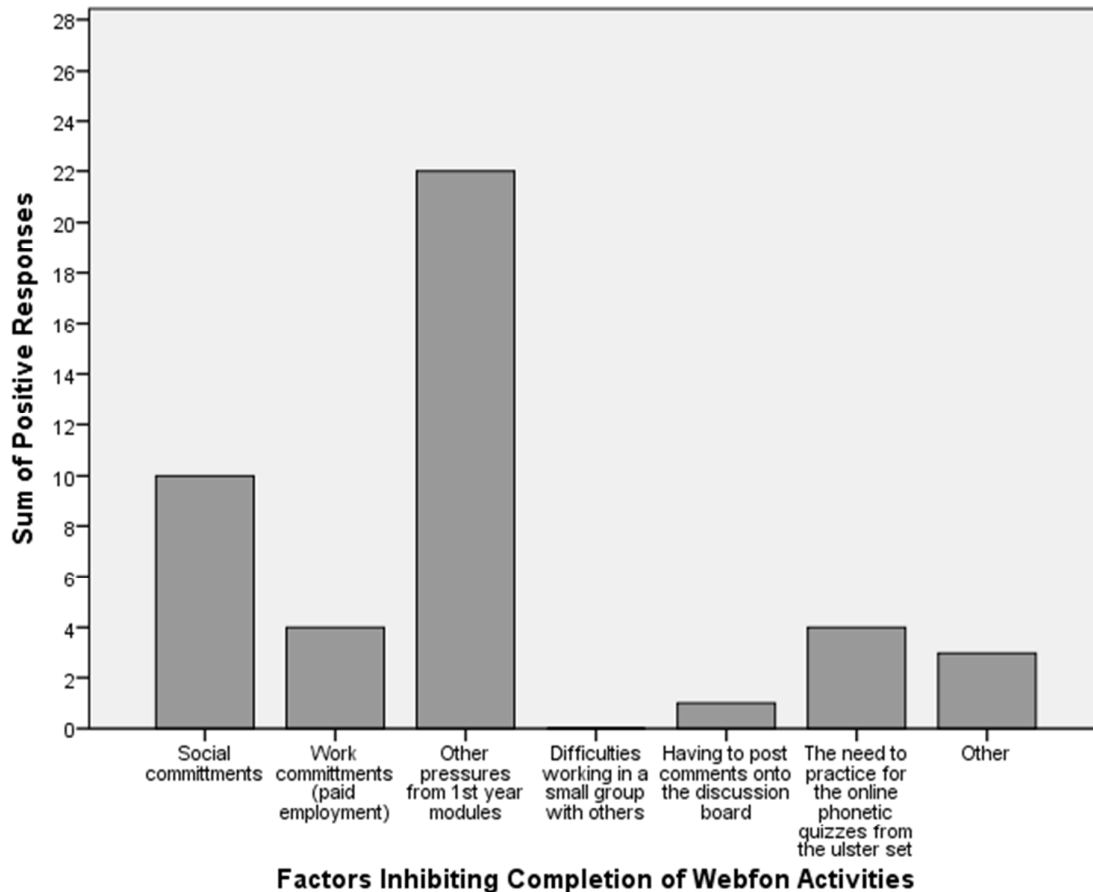


Figure 3. Motivators for completing practice on WebFon



View Only

Figure 4. Inhibitors to completion of practice on WebFon



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Table 1: Student perception of all online learning opportunities (1 = not helpful, 2 = a little helpful, 3 = moderately helpful, 4 = significantly helpful)

	Perception of helpfulness of task			
	All online exercises	Webfon	'Ulster Set'	Focus on Ulster vowels
Mean (standard deviation)	3.78 (.42)	3.56 (.64)	3.63 (.56)	3.7 (.54)

For Peer Review Only

Table 2. Key themes on perceived support of the ‘Ulster Set’ for both the final coursework and development of phonetic transcription skills in general

Theme	Frequency: n (%)
Focus on Ulster vowels/accent: <i>“I now feel much more confident transcribing Ulster speech as I found the vowels difficult at first. However, now, I can see the benefit from the ‘Ulster Set’ tests” and “Good to be tested on accents similar to our own – think will help for placement”</i>	21 (78%)
Support for final coursework: <i>“I think it significantly helped my performance because of the large amount of practice it gave me and because it helped me to identify errors early on”</i>	17 (63%)
Support for development of transcription skills in general through regular prescribed practice encouraging learning of phonetic symbols and refining listening skills (in particular the Ulster vowels) <i>“Helped as we had individual practice in transcribing and our skills were built on each week”;</i>	12 (44%)
Immediate measurable feedback on the ‘Ulster Set’: <i>‘Seeing each week how I was improving gave me confidence and motivation’; “I found it helpful that I was given a mark for each quiz as it gave me a marker on my progress”</i>	6 (22%)
Relevance: Some students queried the relevance of the ‘Ulster Set’ to preparation for the final coursework which used a speech sample from a child with a SBS accent.	5 (19%)

Table 3. Key themes on perceived support of WebFon for both the final coursework and development of phonetic transcription skills in general

Theme	Frequency: n (%)
Range of/different accents: <i>“Allowed me to practice with different accents”</i>	11 (41%)
Clinical data supported learning to distinguish/discriminate between phonemes characteristic of disordered speech/atypical patterns: <i>“Helped to practise listening out for disordered speech sounds”</i> and <i>‘Good for helping with unusual consonants which may be the result of a speech delay’</i>	9 (33%)
Support for development of transcription skills in general through the number and range of exercises provided: <i>“I was able to go back and revise everything I felt I wasn’t confident on which was really useful. It helped me recognise mistakes and developed my skills”</i> and <i>“WebFon was helpful because it had such a wide range of different exercises to practise transcription and learning different sounds…….”</i> ;	9 (33%)
Support for final coursework: <i>“Helped in final coursework in developing understanding of SBS vowels and consonants and how these were different to Ulster vowels”</i>	5 (19%)
Accessibility: <i>“WebFon was really valuable as you could use it any time and there was a great amount of content to practise”.</i>	5 (19%)