A self-learning module for students of speech-language pathology in phonetic transcription of Tamil

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Abstract

Objectives: The study aimed to develop and assess the effectiveness of a self-learning module in phonetic transcription of Tamil language for students of speech-language pathology. **Methods:** A self-learning module with information on phonetic transcription and sounds of Tamil was developed. Exercises for practicing transcription at the word and phrase levels were included in the module. Content validity of the module was established through consultations with experienced speech-language pathologists and linguists. Fifty undergraduate students of Audiology and Speech-Language Pathology (ASLP), with limited exposure to phonetic transcription, completed the self-learning module individually. The efficacy of the self-learning module was evaluated through a questionnaire, and a phonetic transcription task aimed at assessing the knowledge and skill of transcription. Participants completed the questionnaire and transcription task prior to and after completion of the self-learning module. **Results:** Postlearning scores on the questionnaire and phonetic transcription task were significantly higher than prelearning scores suggesting improvement in knowledge and skill of transcription upon completion of the self-learning module. Transcription accuracy increased for different categories of vowels and consonants. **Conclusion:** The self-learning module demonstrates promise as an acceptable and effective method for learning phonetic transcription by undergraduate students of ASLP.

Key words: International Phonetic Alphabet, linguistics, speech, transcription

Introduction

In linguistics, the term transcription refers to the process of recording the phonological and morphological components of a language in terms of a specific writing system.[1] Transcription can be phonetic or phonemic. Phonetic transcription is the process of representing connected speech or text based on their physical forms. Phonemic transcription represents the phonemes of the language. Phonemic transcription is possible only on understanding and analyzing the phonology of the language.

Transcription is done using the International Phonetic Alphabet (IPA) to give a detailed transcription of sounds. The International Phonetic Association founded in 1886 published the first IPA in the year 1888.[2] IPA offers a one-to-one correspondence between phoneme realizations and sound symbols. It has been used to

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Access this article online	
Quick Response Code:	**Website:** www.jisha.org
	DOI: 10.4103/0974-2131.196254

indicate the pronunciation in the dictionary and to record a language during linguistic field work as the basis of a writing system for a language or to annotate acoustics and other characteristics during analysis of speech.

Speech-language pathologists (SLPs) use transcription to record accurately "what was said" and "how it sounded." Transcription describes the nature of phoneme production and helps to identify the degree or severity of speech sound disorders. These descriptions are also used to document the progress or efficacy of the intervention.[3] The extIPA chart was introduced by the International Phonetic Association for transcribing disordered speech since IPA was found to be insufficient in capturing finer nuances of disordered speech.[4] Accurate transcription requires more than just knowledge of extIPA symbols. SLP must have knowledge about sounds of the language that he/she is transcribing. There are abstract phonological differences between languages and even within a language, there may be a range of phonetic variants. For example, the retroflex approximant [ɻ] is a classical sound in several South Indian languages. Similarly, aspirated sounds are present in Hindi but not present in Tamil. Perceiving the subtle phonetic differences between the native language and local language can be challenging. If the clinicians are unaware of the phonetic differences in consonants and vowels that are not distinct in their native language, they may go unnoticed. Thus, SLPs require knowledge of transcription of the local language.

Tamil is a Dravidian language spoken by more than 53 million people in India. It is an ancient language with rich literature and heritage. Tamil is expressed in two forms. The first form is the formal way following the rules and standards set in the early centuries as observed in literature forms. The second form is the colloquial use of the language that is characterized by variations due to social and regional differences. In addition, the orthography of Tamil uses a single symbol for sounds occurring at the same place of articulation. Its script is phonetic/syllable based and has structured pronunciation rules.[5] There are 10 vowels and 28 consonants in Tamil language.[6] The central vowel /ɨ/ is also found in Tamil.

It has been reported that most clinicians have little experience with narrow transcription and find it unapproachable, time-consuming, and impossible.[3,7] Students are unaware of the benefits of using diacritics and symbols that extend beyond the basic broad transcription.[8] Many SLP students do not feel comfortable with phonetic transcription and therefore tend to use it as infrequently as possible.[3] Transcription is usually taught to SLPs as a part of the course. Hazan and Dommelen[9] reported that transcription skills are imparted to students in small group practical sessions. Modern teaching technologies enable students to utilize online/offline self-learning resources. Such resources could be useful as supplements to students of speech-language pathology in learning transcription. The use of recorded materials has helped students to gain listening and transcribing skills in and outside classrooms. It also allows students to receive detailed feedback on their transcriptions. Howard and Heselwood[7] suggested that this would promote student-centered learning and efficient transcription skills.

The current syllabus for Bachelor in Audiology and Speech-Language Pathology (ASLP) revised by Rehabilitation Council of India 2009[10] does not include linguistics as an independent subject. A few topics in linguistics, IPA, and transcription are included in the 1st year syllabus under the subject titled "Introduction to Human Communication." The clinical utility of IPA and transcription is taught in the 2nd year subject titled "Articulation and Phonological Disorders." These are taught by SLPs who may not have adequate preparation in linguistics or transcription themselves. There is limited time and focus in the curriculum for classroom learning and practice of transcription, an essential skill for SLPs. Further, as the student begins to work in the clinic, he/she is required to transcribe in the language spoken locally. One of the options to supplement the learning of transcription and provide students with opportunities for continued revision is to consider the use of a self-learning module.

Self-learning material is a learning resource that can be used by the learner without requiring the presence of a teacher. It includes instructional materials necessary for the learning of a specific unit or topic.[11] It delivers both learning and information at will, dynamically and immediately.[12] Self-learning materials could be printed manuals, illustrations, videos, as well as computer-assisted material in the form of DVDs or online training courses. Computer-assisted interactions have become increasingly popular to deliver educational materials, particularly in medical schools. Increased efficiency, portability, consistency, and effectiveness are some of the possible reasons for the rising use of technology-assisted learning.[13,14] Self-learning modules are advantageous in that they allow learners to get trained at home without any disruption at their own time and pace. The use of self-learning modules are economical as the learning material can be used by a

greater number of people compared to formal training courses which limit the number of participants; also, there is no need for any physical teaching facility such as classroom practice. The current study was planned to explore the use of a self-learning module for phonetic transcription skills. The aim of the study was to develop and evaluate the efficacy of a self-learning module on imparting knowledge and skills in phonetic transcription of sounds of Tamil language to students pursuing an undergraduate degree in the field of ASLP.

Methods

Participants
Fifty undergraduate students of ASLP participated in the study. The students belonged to an institute different from that of the authors to avoid bias in participant selection. All participants except three were familiar with Tamil language. Informed consent was obtained from all the participants. The study was approved by the Ethics Committee for student projects at Sri Ramachandra University, Chennai.

Development of self-learning module
A review of literature was undertaken on the structure and content of self-learning tools/methods to teach phonetic transcription. Three SLPs with training and experience in transcription were consulted to determine the context, difficulty level, and structure of the module. The module was structured into a recorded lecture with PowerPoint slides and transcription exercises as aids to learning. The module was made available in a compact disc along with a manual-cum-workbook. The information in the module was categorized into two sections: (1) content of recorded lecture which included an introduction to transcription and IPA symbols and sounds of Tamil language with examples of transcription at word level and (2) exercises for practicing transcription at word and phrase levels. Focus on transcription at the phoneme level was not provided in the exercises since transcription of speech sample involves transcription at word/phrase level. The exercises included a closed set and few open-ended tasks. An answer key was provided for each exercise. The content of the module and the transcription exercises are described in Appendix 1a and 1b, respectively. A script was prepared in English for different sections of the module. Appropriate visual content for the PowerPoint slides was developed to supplement the script. Audio recordings of script and speech samples for transcription were recorded using Adobe Audition CS.5 (Adobe Systems Incorporated, San Jose, California, United States) software at a sampling rate of 22,050 Hz and 16 bit mono sound in a sound-treated room. All speech samples for transcription were produced by a single adult female speaker proficient in Tamil language.

A questionnaire and a phonetic transcription task were developed to evaluate the effectiveness of the module in terms of knowledge and skill of transcription, respectively. The 15-item multiple choice questionnaire included five questions relating to "Introduction of transcription" and ten questions relating to "Sounds of Tamil language." Each question had four options with one single best choice answer. Each correct response was marked 1 and incorrect response 0. The questionnaire permitted a maximum score of 15. Phonetic transcription task for skill assessment required the participants to transcribe 15 words and 10 phrases in Tamil. All sounds of Tamil were sampled through the words and phrases. Participants were required to listen to audio samples and transcribe them. Each sound (in a word or phrase) was considered a token and if transcribed correctly was given a score of 1. The phonetic transcription task permitted a maximum score of 205.

Two SLPs, not involved in the development phase, independently validated the module for its content. Different sections of the module were evaluated for relevance, accuracy, simplicity, and clarity. Relevance and accuracy were rated dichotomously (relevant/irrelevant or accurate/inaccurate). Three-point rating scales were used for rating simplicity (not simple, needs minor revisions, and very simple) and clarity (not clear, needs minor revision, and very clear) of the sections. Transcription of the embedded examples and exercise key list were verified for accuracy of transcription. The questionnaire and phonetic transcription task were also validated for content by the SLPs. The questionnaire to assess knowledge was validated for appropriateness. The accuracy of the transcription of words and phrases in the phonetic transcription task was also evaluated. The evaluators listened to the audio samples of the words and phrases and verified the accuracy of transcription.

Testing the effectiveness of the training module
This phase of the study was carried out within a classroom. Effort was taken to reduce and control extraneous noise as participants were required to listen carefully to audio samples. Ten laptops with headphones were setup in the classroom. The laptops were preloaded with the speech samples for phonetic transcription task and self-learning module.

All participants completed the questionnaire and phonetic transcription task prior to commencing the self-learning module for the prelearning assessment.

The manual-cum-workbook containing the printed copy of the module and exercise sheets were distributed to the participants after prelearning assessment. Each participant completed the self-learning module individually using the laptop computer. The manual contained instructions to begin the self-learning module. The investigator provided only technical assistance/clarifications as required. There was no time limit for completing the task and participants could repeat and review sections of the module. Participants were also permitted to take breaks as required while completing the module. The knowledge questionnaire and phonetic transcription task for postlearning assessment were administered after the participants stated that they were ready and confident to attempt the same. The effectiveness of the module was evaluated by comparing the pre- and post-learning scores of the participants.

Statistical analyses
Mean and standard deviation of scores on the questionnaire and phonetic transcription task were calculated. Paired sample *t*-test was used to assess a significant difference between pre-and post-learning scores on questionnaire and phonetic transcription task.

Results

Questionnaire for knowledge assessment
Performance of participants on the questionnaire prior to and after completion of the self-learning module is shown in Table 1. Section A of the questionnaire comprised five questions relating to "Introduction to Transcription." Section B comprised ten questions relating to "IPA symbols and sounds of Tamil language." Postlearning scores (M = 10.22, standard deviation [SD] =1.90) on the questionnaire were significantly higher (t[49] = −12.844, *P* < 0.001) than the prelearning scores (M = 6.16, SD = 2.00). As a group, participants demonstrated significantly higher postlearning scores in both Sections A and B of the questionnaire. Further, the three participants unfamiliar with Tamil demonstrated prelearning (M = 6.33, SD = 2.08) and postlearning scores (M = 11, SD = 1) which were similar to the

group mean suggesting that not knowing Tamil was not a hindrance to acquiring knowledge on phonetic transcription of sounds in Tamil for a student of ASLP.

Percentage number of participants obtaining accurate responses on individual questions in the questionnaire at pre- and post-learning administration is shown in Table 2. The change in accurate responses from pre- to post-learning administration is depicted. As seen from the Table 2, 90% or more participants gave accurate responses for questions 1, 2, 4, and 5 within Section A at postlearning administration of the questionnaire. The third question ("When transcribed phonetically the sound symbols are placed within___") was answered accurately by only 61% of participants in the postlearning administration. However, there was a 57% increase in the number of participants who answered this question accurately after completion of the self-learning module. This suggested that the module provided the participants with knowledge related to a broad introduction to transcription. Section B included a few questions (7, 10, and 11) that were answered accurately by more than 75% of the participants on postlearning administration. Percentage number of participants with accurate responses for other questions in Section B ranged from 4% to 50%. Since IPA symbols were relatively new for the student, more reiteration and emphasis may be required for student learning.

Transcription task for skill assessment
Each participant transcribed 205 phonemes with 90 vowels, 3 diphthongs, and 112 consonants as a part of the phonetic transcription task for assessing skill of transcription. Table 3 shows the mean accurate scores obtained by participants for transcription of all phonemes and phonemes by word and phrase. Paired *t*-test revealed a significant improvement in transcription of phonemes from pre- to post-learning. The mean percentage of phonemes accurately transcribed in posttest was higher for phonemes at word level (78.6%) in comparison to phonemes at phrase level (60%) as shown in Figure 1.

Postlearning scores for accurate transcription of vowels, diphthongs, and consonants were significantly higher

Table 1: Comparison of pre- and post-learning scores on questionnaire for knowledge assessment

	Maximum score	Mean (SD)		*t* (df=49)	*P*
		Prelearning scores	**Postlearning scores**		
Section-A introduction to transcription	5	2.40 (1.67)	4.20 (1.37)	5.87	<0.001
Section-B IPA and sounds of Tamil	10	3.76 (1.70)	6.06 (1.68)	7.47	<0.001
Section A and B (total)	15	6.16 (2.00)	10.22 (1.90)	12.84	<0.001

SD: Standard deviation; IPA: International Phonetic Alphabet

than prelearning scores [Table 4]. Figure 2 shows the mean percentage scores for accurate transcription of vowels, diphthongs, and consonants. Mean percentage of accurate transcription of vowels (56.8%) was lower than that obtained for diphthongs (82%) and consonants (72.6%). Participants found transcription of vowels to be more challenging than transcription of consonants.

Accuracy of transcription was analyzed by different categories of vowels (front, central, and back vowels)
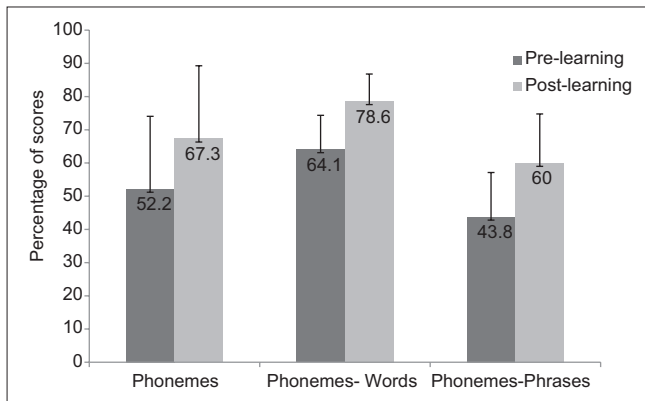

Figure 1: Comparison of mean percentage of accurate transcription of all phonemes at word and phrase levels
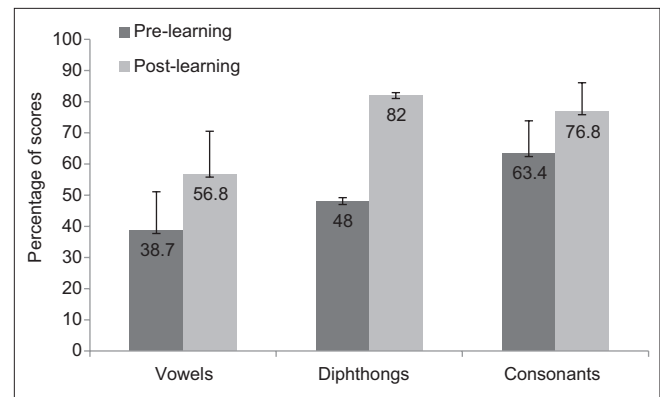

Figure 2: Comparison of mean percentage of accurate transcription of vowels, diphthongs, and consonants in pre- and post-learning assessments

Table 2: Percentage of participants with accurate responses on pre- and post-learning questionnaire				
Question number	Question	Percentage accurate responses		
		Prelearning	Postlearning	Percentage change
1	The transcription that gives importance to every possible phonetic feature observed and heard by the transcriber is _____	72	90	18
2	Phonetic transcription is also known as _____	30	92	62
3	When transcribed phonetically the sound symbols are placed within _____	4	61	57
4	Symbols used to represent the modification of sound productions are _____	70	90	20
5	The IPA representation for the sound "sh" is _____	80	98	18
6	"a" is a _____ sound	20	36	16
7	The diphthongs of Tamil language are _____	54	90	36
8	The IPA representation of voiced dental stop in Tamil language is _____	26	30	4
9	(ɻ) is a _____	22	72	50
10	(j) is the IPA representation of the sound transcribed as in the word _____	64	88	24
11	The IPA representation for the sound "ch" as in the word "pachchai" is _____	64	82	18
12	Tamil nasal consonant/n/occurs at _____ place of articulation	26	46	20
13	Retroflex plosive found in Tamil language is _____	22	52	30
14	(ɾ) is a _____	36	58	22
15	The fricative found in Tamil language is _____	26	46	20

IPA: International Phonetic Alphabet

Table 3: Comparison of pre- and post-learning scores for accurate transcription of all phonemes, phonemes in words and phrases					
	Maximum score	Mean (SD)		*t* (df=49)	*P*
		Prelearning	Postlearning		
All phonemes	205	107.08 (21.86)	138.00 (21.99)	11.882	<0.001
Phonemes-words	87	55.72 (10.24)	68.34 (8.19)	10.796	<0.001
Phonemes-phrases	118	51.62 (13.33)	70.74 (14.76)	10.998	<0.001

SD: Standard deviation

and consonants (manner of articulation). Mean scores obtained by participants for accurate transcription of phonemes by different categories of vowels and consonants are shown in Tables 5 and 6, respectively. Postlearning transcription scores were significantly higher in comparison to prelearning scores for all three categories of vowels; front vowels were transcribed with greater accuracy in comparison to central and back vowels. As seen from Figure 3, mean percentage of accurate transcription was higher for front vowels (58.9%) in comparison to central (33.9%) and back vowels (39.25%) prior to undertaking self-learning module. Results followed the same pattern for front vowels with 68.6%, while central and back vowels obtained 57.7% and 52%, respectively, after completion of the self-learning module. Transcription accuracy increased significantly across all consonant categories after completion of module. Figure 4 shows that the mean percentage of accurate transcription of

all consonant categories (except affricates) was 70% or more. The mean percentage of accurate transcription of affricates increased from 18.4% to 40.8% after completion of module.

Discussion

The module was developed with the specific purpose of developing a self-learning tool for transcription of sounds of Tamil language. This was intended to supplement the minimal exposure students of speech-language pathology have in linguistics and transcription within the curriculum. The objective was to provide knowledge and skill in a format that would allow participants to learn and practice by themselves.

While designing the questionnaire and phonetic transcription task, care was taken to ensure that all aspects included in the self-learning module would be probed. The maximum score (ceiling score) was not achieved by any participant in either acquisition of knowledge or skill in transcription. However, all aspects showed a statistically significant improvement in knowledge and skill of transcription. This would suggest
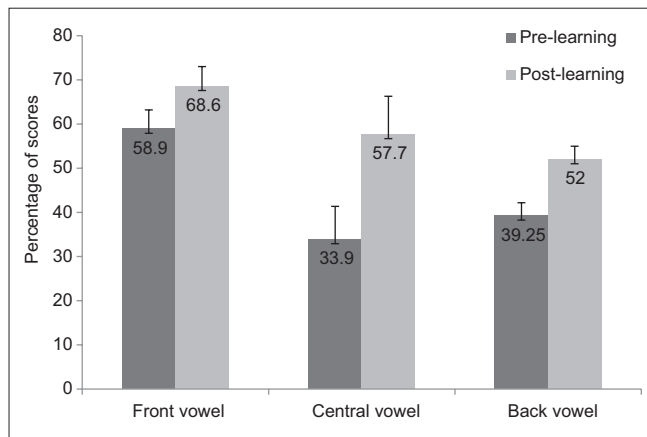

Figure 3: Comparison of mean percentage of accurate transcription of vowels by category in pre- and post-learning assessments
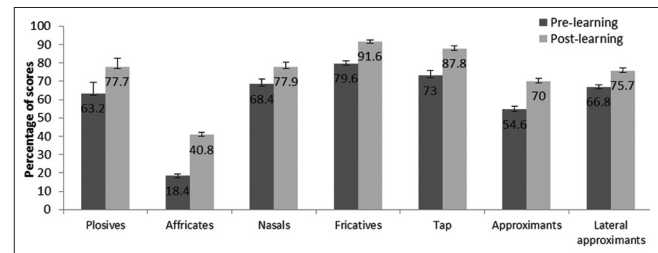

Figure 4: Comparison of mean percentage of accurate transcription of consonants by category in pre- and post-learning assessments

Table 4: Comparison of pre- and post-learning scores for accurate transcription of vowels, diphthongs, and consonants

	Maximum scores	Mean (SD)		*t* (df=49)	*P*
		Prelearning	Postlearning		
Vowels	90	34.80 (12.38)	51.12 (13.72)	9.848	<0.001
Diphthongs	3	1.44 (1.22)	2.46 (0.89)	5.477	<0.001
Consonants	112	71.06 (10.47)	86.00 (9.26)	12.120	<0.001

SD: Standard deviation

Table 5: Comparison of pre- and post-learning scores for accurate transcription of front, central, and back vowels

	Maximum scores	Mean (SD)		*t* (df=49)	*P*
		Prelearning	Postlearning		
Front vowels	23	12.96 (4.29)	15.26 (4.40)	3.815	<0.001
Central vowels	47	15.60 (7.46)	26.54 (8.58)	9.324	<0.001
Back vowels	20	6.28 (2.94)	9.14 (2.99)	6.600	<0.001

SD: Standard deviation

Table 6: Comparison of pre- and post-learning scores for accurate transcription of consonants by manner of articulation

	Maximum scores	Mean (SD)		*t* (df=49)	*P*
		Prelearning	Postlearning		
Plosives	53	33.50 (6.12)	41.20 (4.92)	8.706	<0.001
Affricates	5	0.92 (0.99)	2.04 (1.29)	6.476	<0.001
Nasals	22	15.04 (2.84)	17.14 (2.53)	4.455	<0.001
Fricatives	5	3.98 (1.51)	4.58 (0.84)	3.063	0.004*
Taps	10	7.30 (2.86)	8.78 (1.67)	3.698	0.001*
Approximants	10	5.46 (1.53)	6.96 (1.53)	6.550	<0.001
Lateral approximants	7	4.68 (1.02)	5.30 (1.18)	2.828	0.007*

*Statistically significant (*P*<0.05), SD: Standard deviation

that the questionnaire and phonetic transcription task were adequate to assess pre- and post-learning performance. The fact that no individual obtained ceiling score suggests that the questionnaire and phonetic transcription were not very easy. Further, analysis of performance on transcription after completion of the module provided information on specific areas that require reiteration and increased emphasis in the module to enhance learning. For example, additional practice may be incorporated or transcription of vowels and affricates among consonants.

None of the participants had previous exposure to transcription and the module was able to provide an insight into transcription. Statistically significant difference was observed between scores obtained in the pre- and post-learning assessment of knowledge and transcription skill. The result supports the use of the self-learning module for learning phonetic transcription in the field of speech-language pathology.

Earlier research reported that training modules were effective in providing knowledge. Shunmugam[15] developed a training program for resource workers in the community on speech characteristics of individuals with cleft lip and palate (CLP). A booklet was developed along with an audio–visual training material and administered to 47 resource workers. Participants' understanding and identification of speech errors in individuals with CLP significantly improved on completion of the training program. Dhas[16] developed a training module for undergraduate students of speech-language pathology comprising didactic lecture focusing on identifying articulatory and resonance errors in individuals with CLP. Postcompletion of the training module, students were able to accurately identify articulatory error patterns but performed poorly in identifying resonance error patterns observed in individuals with CLP. Begum[17] developed a self-learning module on video documentation. The module consisted of materials for an effective video documentation for students of speech-language pathology. Results revealed that the module demonstrated potential benefits, proficiency, and improvement on the topic of video recording.

The results of the current study are largely in consonance with earlier research[15-17] that training modules can be effective tools to provide knowledge and information on a particular topic. However, as reported by others,[15-17] the improvement in skill sets was less evident than improvement in knowledge. A skill requires repeated practice and even in the area of transcription, learning "narrow transcription" requires a lot of training. Howard and Heselwood[7] have suggested that students must spend at least an hour a day for a year or two along with their teachers while learning to do transcription. More opportunity and time for practice and internalization could have facilitated skill learning better.

Results of the study also suggest that transcription of vowels is more difficult than consonants. Pollock, Karen, and Berni[18] suggested that transcription of vowels is difficult because they are less discrete than consonants and more variable across dialects. Howard and Heselwood[19] observed that consonants are subjected to narrow transcription while vowels occurring in the same word are subjected to broad transcription. Pye *et al*. (1988)[19] suggested that diphthongs are easier to transcribe than vowels. Three problems identified during transcription of vowels in connected speech by Kansakar[20] include the following: (a) descriptions of vowels are often in terms of theoretical place of articulation. It is difficult to determine these tongue positions for vowels in words and connected speech, (b) dialectal variations cause difference in the same vowel, (c) different symbols are used based on the type of transcription.

Participants were asked to provide open-ended feedback on their experience with the module. Qualitative analysis of the feedback obtained revealed that 70% of participants felt that their skills of transcription had

improved on completion of the module. Participants also reported that the description of each sound in Tamil language was informative and useful. Majority (90%) of participants wanted a copy of the module to practice and learn transcription. Almost one-third of the participants (30%) reported that the module was too long and time-consuming. Five participants reported that the module was "boring" and they needed breaks in between.

Several factors may have influenced students' optimum utilization of the module and learning. The entire module and the learning assessments were completed on the same day. The pre- and post-learning assessments took 30–45 min each. Spending half a day working intensively in one topic may have been challenging. Transcription by itself requires a considerable amount of concentration and application. It was clear that skill acquisition in transcription of Tamil was incomplete for the participants in the study. Items in the skill assessment tool required students to perform transcription task, i.e., listen to samples and transcribe the word or phrase. Such a task is equivalent to an open-ended task where the student had to listen, recall the IPA symbol, and transcribe. In contrast, majority of exercises included in the self-learning module involved close-ended tasks wherein the participant had to listen to speech samples and identify the accurate response among two choices. It is possible that with more number of exercise items, variety of exercises for practice, and more time for practice, skill in transcription could have been enhanced. It is also possible to include a task similar to exercises (choose the correct option) to be administered in the assessment tool.

Analysis of the results obtained from the questionnaire and transcription task, pre- and post-learning, suggested that some changes can be made to improve the utility of the module. The module can be re-examined to include more reiterations and emphasis on the descriptions of the sounds and IPA for Tamil language. A variety of tasks could be provided as exercises for practicing transcription. Moreover, exercises for transcription of sounds at phoneme level would have facilitated the participants to learn IPA symbols appropriately and accurately. This module was completed in one sitting due to logistical reasons. In an ideal situation, as suggested by several authors, skill in transcription needs to be learned over time and repeated practice. This can be overcome by presenting the module in two parts. The first part can focus on providing knowledge about transcription and IPA symbols and the second part can focus on transcription. These could follow one another but must be presented with adequate time for

internalization after the first part. Furthermore, the number and type of exercises in the module can be improved to facilitate learning of transcription.

Self-learning module should ideally be provided to students. They have the liberty to access the information at his/her convenience and pace. Another method to assess utility would be to ascertain if learning and retention of information and skill can be enhanced by allowing more time to the students to learn and relearn the information in the module. Supplemental modules can also be developed for facilitating transcription of speech sound disorders. These modules could utilize the extIPA chart for transcribing speech sounds of disordered productions such as individuals with a cleft of lip and/or palate. These modules could be used as advanced learning materials.

Conflicts of interest
There are no conflicts of interest.

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Appendix 1a: Section and contents of the module in the recorded lecture

Subsections	Contents	Slide numbers
Overview and instruction	Overview of the module and instructions to use the module	1-3
Introduction to transcription		
Overview on transcription	Introduction to transcription	4-7
	Need for transcription	
Introduction to IPA chart	IPA and their corresponding symbols	8-11
	Diacritic markers with appropriate examples	
Types of transcription	Overview on types of transcription: phonetic transcription and phonemic transcription	12-14
	Alternative names and appropriate example to differentiate both the types	
IPA symbols and sounds of Tamil language		15
Vowels and the vowels in Tamil language	Brief introduction to vowels and the vowel quadrilateral	16-23
	Vowel chart for the vowels found in Tamil language (11 vowels)	
	Appropriate audio samples with transcription for vowels occurring at initial and medial positions of words	
Diphthongs and the diphthongs in Tamil language	Brief introduction to diphthongs and the diphthongs found in Tamil language (2 diphthongs)	24-25
	Appropriate audio samples with transcription for diphthongs of Tamil language	
Consonants and the consonants in Tamil language	Brief introduction to the consonants	26-36
	Consonant chart for consonants found in Tamil language explained based on place and manner of articulation	
	Appropriate audio samples with transcription for consonants occurring at initial and medial positions of words in Tamil	

IPA: International Phonetic Alphabet

Appendix 1b: Nature of task provided in the module as exercises for transcription of words/phrases in Tamil language

Exercises	Objective	Number of items
Exercise 1 (bisyllabic words)	Listen to the sample and choose the correct option among two choice given	
1a	Choose the correct IPA symbol for vowels	10
1b	Choose the correct IPA symbol for consonants	10
1c	Choose the correct IPA symbol for vowels and consonants	10
Exercise 2 (polysyllabic words)	Listen to the sample and choose the correct option among two choice given	
2a	Choose the correct IPA symbols for vowels	10
2b	Choose the correct IPA symbols for consonants	10
2c	Choose the correct IPA symbols for vowels and consonants	10
Exercise 3 (bisyllabic and polysyllabic words)	Fill in the blank Listen to the audio sample and fill in the missing symbol	20
Exercise 4 (bisyllabic and polysyllabic words)	Transcribing at word level Listen to the audio samples and transcribe the words	20
Exercise 5 (phrases)	Transcribing at phrase level	20
	Listen to the audio samples and transcribe the phrases	

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