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WORKING ON DACTYL SPEECH WITH CHILDREN WITH HEARING IMPAIRMENTS

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Abstract. This article examines the theoretical and practical foundations of teaching dactyl speech to children with hearing impairments. Hearing loss can influence the development of spoken language, phonemic awareness, vocabulary, sentence comprehension and participation in everyday communication. In this context, dactyl speech—the representation of letters through conventional hand and finger configurations—can serve as a supportive educational and communicative resource. The article considers the pedagogical significance of dactyl speech, the aims and stages of teaching the dactyl alphabet, and the visual, motor and cognitive processes involved in learning dactyl signs. It discusses methodological approaches such as demonstration, practical imitation, reproduction, communication-based activities and differentiated instruction. Particular attention is paid to connecting dactyl forms with written words, spoken-language learning where appropriate, sign language and concrete objects or pictures. Examples of classroom exercises and assessment criteria are also presented. The article argues that dactyl speech should not be taught merely as a sequence of isolated hand movements: it should be embedded in meaningful communicative situations and adapted to each learner's age, language experience, educational needs and preferred modes of communication. Systematic, accessible and individualized teaching can help learners recognize letter sequences, develop fine-motor coordination and visual memory, expand vocabulary, and participate more actively in educational and social settings.

Keywords: .

Introduction

Language is central to learning, social participation and the development of relationships. For children with hearing impairments, access to language and communication may require carefully planned educational support. The extent and nature of a child's communication needs differ according to such factors as the degree and onset of hearing loss, access to appropriate technology and intervention, family communication practices, prior language experience, and the educational environment. Therefore, teaching should be based on an assessment of the individual child rather than on assumptions that all children with hearing impairments develop in the same way. Dactyl speech is one of the communication resources used in deaf education. In a dactyl system, letters of an alphabet are represented by conventional hand or finger configurations. The learner can therefore perceive a letter sequence visually and reproduce it through hand movements. Dactyl speech may support the learning of written forms, the clarification of the spelling of unfamiliar words and communication in situations where a precise letter sequence is useful. Its educational value is greatest when it is connected to meaningful language and used alongside the communication modes that are accessible

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and appropriate for the child. The purpose of this article is to describe the pedagogical foundations of working on dactyl speech with children with hearing impairments and to outline practical principles for organizing instruction. The discussion addresses the nature and functions of dactyl speech, its relationship to language and communication, the stages and methods of teaching, the use of visual materials, individualization, practical exercises and assessment. The article follows the conceptual framing of the source manuscript and develops its central points into a coherent English-language academic text.

1. The scientific and pedagogical nature of dactyl speech

Dactyl speech is a conventional visual-motor system in which alphabetic units are represented by specific configurations or movements of the fingers and hand. Unlike spoken language, which is primarily perceived through hearing and produced through vocal activity, dactyl forms are mainly perceived visually and reproduced through manual movement. This characteristic makes dactyl speech a potentially useful resource for learners who need visual access to alphabetic information. A central feature of dactyl speech is its letter-by-letter principle. A word is represented through a sequence of dactyl forms corresponding to its letters. Learning this sequence can draw the child's attention to the composition of words and to the relationship between written letters and their visual representations. When instruction is carefully connected with reading and writing, dactyl practice may help learners notice the order of letters, compare word forms and remember the spelling of familiar vocabulary. These benefits should be understood as educational possibilities rather than automatic outcomes; progress depends on the child's language experience, instruction and opportunities for meaningful practice.Dactyl speech has both communicative and pedagogical functions. Communicatively, it can convey letter sequences, names, unfamiliar terms and other information for which spelling matters. Pedagogically, it provides structured opportunities to direct attention, remember sequences, coordinate finger movements and analyze the written structure of words. These activities may engage visual discrimination, visual memory, attention and fine-motor coordination. They can also support classroom routines in which learners match a dactyl sequence with a printed word, a picture or a real object. It is important to distinguish dactyl speech from sign language. Sign languages are full linguistic systems with their own vocabulary and grammatical structures; they are not simply collections of gestures that reproduce spoken-language words. Dactyl systems, by contrast, represent letters and are often used to clarify the spelling of words or to represent names and terms. Dactyl speech and sign language can complement one another, but one should not be treated as a substitute for the other. The educational objective is to provide effective access to communication and learning, not to require every child to use a single mode.

2. The significance of dactyl speech for children with hearing impairments

The development of communication in children with hearing impairments is shaped by multiple interacting factors. Some children use spoken language, some use sign language, and many use more than one communication mode according to the situation. Dactyl speech can be incorporated into this wider communication environment when it meets a learner's needs and is taught in an accessible way. One important feature of dactyl speech is its visual character. A child can observe a hand configuration and identify the letter it represents without relying exclusively on auditory information. For learners who experience difficulty perceiving spoken language, visual access to letters can make certain learning tasks clearer. The teacher should nevertheless ensure that the dactyl forms are visible, consistently presented and not obscured by unnecessary movement or poor positioning. Dactyl speech

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can also support vocabulary learning. When a new word is introduced, the teacher may present the real object or a picture, display the printed word, demonstrate its dactyl sequence and explain its meaning using the child's accessible language. This creates links among the concept, its visual representation, its written form and the dactyl sequence. For example, a lesson about classroom objects can combine a real pencil, a picture, the written word "pencil" and its dactyl representation. The learner is then supported in connecting the word with an actual referent rather than memorizing a sequence of hand movements without meaning. Another possible benefit concerns fine-motor coordination. Producing dactyl forms requires controlled and differentiated finger movements. Repeated, purposeful practice can give children opportunities to improve the accuracy and consistency of these movements. However, manual performance should not become the sole measure of learning. A learner may understand a word but need more time to reproduce its dactyl form, or may reproduce a sequence accurately without fully understanding the word. Assessment should therefore examine both form and meaning. Dactyl activities can also contribute to participation in classroom interaction. Learners may use them when spelling a name, clarifying an unfamiliar term, answering a teacher's question or working with a peer. Such activities are most effective when they occur naturally within lessons and social exchanges. The teacher should avoid making dactyl speech an isolated drill that has little connection with the child's everyday communication.

3. Aims and methodological foundations of teaching the dactyl alphabet

Teaching the dactyl alphabet should be systematic, sequential and responsive to the learner's current abilities. Before beginning instruction, the teacher should consider the child's visual attention, ability to distinguish hand configurations, fine-motor control, existing language skills and familiarity with letters. This initial observation helps determine an appropriate starting point and the amount of practice likely to be useful. The principal aims of teaching may include helping learners recognize and distinguish dactyl forms; reproduce them with increasing accuracy; understand that each form corresponds to a letter; combine forms into letter sequences, syllables and words; connect dactyl sequences with printed words and meaningful concepts; and use dactyl speech for appropriate communicative purposes. These aims should be integrated rather than taught as entirely separate skills. Instruction can begin with a clear explanation and demonstration of the system. The teacher presents each selected form slowly and consistently, making sure that the learner can see the hand position. The child first observes, then identifies the form and finally attempts to reproduce it. Early practice should involve a manageable number of clearly distinguishable forms. Once these are reasonably secure, the teacher can introduce forms that are visually more similar and help the learner notice the features that distinguish them. The next stage involves combining individual forms. The learner can practise short sequences, then simple syllables and familiar words. Words related to the child's family, classroom, daily routines, games and immediate environment are often useful because they have clear meaning and can be revisited in real situations. The teacher should select vocabulary that is relevant to the learner rather than relying only on abstract or unfamiliar examples. Later, practice should extend to communicative situations. Learners may spell their names, identify objects, answer simple questions, clarify a word or exchange basic information with a partner. The progression from isolated forms to meaningful communication allows the teacher to evaluate whether the child can use the skill beyond a repetition task. The pace of instruction should remain flexible. Some learners may need additional opportunities to distinguish particular forms; others may move quickly to word-level activities. The teacher should adjust the number of new forms, the length of sequences, the visual support provided

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and the complexity of tasks in response to observed progress. Regular review is important, but repetition should be purposeful and varied so that the child learns to recognize and use forms in more than one context.

4. Methods for developing dactyl speech

Several complementary methods can be used to develop dactyl speech. The visual-demonstration method involves presenting a dactyl form clearly and allowing the learner to observe its essential features. The teacher may pair the hand configuration with a printed letter card, but should avoid showing too many new items at once. Demonstration is especially useful at the beginning of instruction and whenever a learner confuses two similar forms. The practical method gives the child opportunities to produce dactyl forms independently and combine them into sequences. Practice may include matching, sorting, identifying, reproducing and spelling familiar words. The teacher should provide feedback promptly and respectfully, showing the correct form where necessary. Feedback should focus on the feature that needs adjustment rather than simply labeling a response as wrong. The reproductive method requires the learner to reproduce a sequence that has been demonstrated by the teacher. For example, the teacher displays a short word through dactyl forms and the learner repeats the same sequence. This can help strengthen visual memory and attention to order. As the learner becomes more confident, the sequence can be extended gradually, with opportunities to check the result against a printed word

The communicative method places dactyl speech in purposeful exchanges. A teacher may ask the learner to spell a name, identify an object, respond to a question or communicate a short piece of information. The goal is not only accurate movement but also appropriate use of the skill in a real interaction. Role-play, paired tasks and classroom routines can create low-pressure opportunities for practice.

Differentiated instruction is essential because children vary in age, hearing history, language development, motor abilities and communication preferences. The teacher may use fewer forms at a time, provide larger visual models, allow additional response time, offer tactile or visual cues where appropriate, or provide more complex word tasks for learners who are ready. Differentiation does not mean lowering expectations arbitrarily; it means creating a route through which each learner can make meaningful progress. These methods are most effective when combined. A lesson might begin with visual demonstration, continue with guided imitation, move to independent spelling and conclude with a short communication task. Such a structure provides a clear progression from perception to production and from practice to application.

5. Connecting dactyl speech with spoken, written and sign language

Dactyl speech should be connected with other forms of language and communication in ways that reflect the learner's needs and educational plan. Where spoken-language development is an appropriate goal, the teacher may connect a dactyl letter with its printed form and, when accessible to the learner, its corresponding speech sound. The aim is to support understanding of relationships among letters, sounds and words without assuming that all children can access speech in the same way. The connection with written language is especially direct because dactyl sequences represent alphabetic units. A useful activity is to ask the learner to produce a familiar word through dactyl forms and then locate or write the same word. Another task may involve comparing a dactyl sequence with a printed word and identifying whether the letters appear in the correct order. Such activities can support attention to spelling and the visual structure of words. Dactyl speech may also be used alongside sign

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language. A sign can communicate the meaning of a concept, while dactyl spelling can clarify its exact written form. This may be helpful with personal names, place names, technical vocabulary or words for which a precise spelling is important. Teachers should respect the linguistic status of sign language and avoid presenting dactyl spelling as a replacement for full access to a natural language. A multisensory and multimodal approach can be useful when it is organized carefully. For example, the teacher may present a real object, name or sign the concept using the learner's accessible communication mode, show the written word, and then demonstrate its dactyl sequence. The learner can match the four elements and use them in a short exchange. The purpose is to strengthen meaningful connections, not to overload the child with simultaneous information. The teacher should observe whether the learner benefits from the combined presentation and adjust it accordingly.

6. Practical exercises for developing dactyl speech

Practical exercises should progress from recognition to production and then to communication. The "Find the Form" activity begins with several familiar dactyl forms. The teacher displays one and asks the learner to select the matching letter card. Once the learner can do this reliably, the teacher can ask the child to identify the form among similar alternatives. In the "Observe and Repeat" activity, the teacher demonstrates one form and the learner reproduces it. The teacher can gradually introduce short sequences, making sure that the child has enough time to observe each element. The aim is accurate and confident production, not speed for its own sake. The "From Letter to Word" activity begins with individual letters and proceeds to syllables and short, familiar words. Picture cards and real objects can help make the vocabulary meaningful. The learner may first identify the picture, then select the printed word and finally represent it through dactyl forms. As competence develops, the teacher can reverse the sequence and ask the learner to match a dactyl word with the correct picture. In the "Find the Word" activity, the teacher presents a word through dactyl forms and the learner chooses its written or pictorial equivalent. This task combines visual discrimination, sequence recognition and vocabulary knowledge. If the learner makes an error, the teacher can shorten the sequence, compare the relevant letters or provide a visual cue before trying again. A "Question-and-Answer" activity develops communication. The teacher asks a simple question through an accessible communication mode and invites the learner to answer using dactyl speech where suitable. Questions may concern a name, a familiar object, a classroom item or a daily routine. The learner should also be allowed to respond through another established communication mode if that is more effective. A "Dactyl Dictation" activity links visual letter sequences with writing. The teacher presents a letter, syllable or familiar word through dactyl forms, and the learner writes the corresponding form. The teacher then compares the written response with the target and discusses any difference. This activity should be adapted to the child's current writing skills and should not be used to penalize difficulties that are unrelated to dactyl recognition. Paired activities can further increase engagement. One learner presents a familiar word through dactyl forms while the other identifies the matching picture or printed word; the roles are then exchanged. Teachers should model respectful communication, ensure that every child has a chance to participate and keep the activity supportive rather than competitive.

7. Visual materials and educational technology

Visual materials play an important role in dactyl instruction because learners need clear access to the hand configurations and to the letters they represent. Useful resources include dactyl alphabet charts, letter cards, picture cards, printed word labels, classroom objects, short worksheets, mirrors when appropriate, and digital presentations or interactive exercises. Materials should be accurate,

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uncluttered and suitable for the learner's age and level of development. At the beginning, it is usually preferable to work with a small set of forms rather than present the entire alphabet at once. The number of items can be increased as the learner becomes more confident. This approach can help sustain attention and reduce unnecessary cognitive demands. When the teacher introduces visually similar forms, it can be useful to place them side by side and draw attention to the specific difference.

Digital resources may provide repeated demonstrations and opportunities to match forms with letters or words. However, technology should support, not replace, interaction with the teacher and other learners. A video or animation is useful only when the hand configuration remains clear and the presentation follows the relevant dactyl system accurately. The teacher should also consider screen size, image quality, pace and accessibility. The organization of the learning environment matters. The learner should be able to see the teacher's hands and face clearly, and visual distractions should be limited during initial instruction. Lighting and seating should support observation. The teacher should check understanding regularly rather than assuming that looking at a demonstration means the child has recognized or understood the form.

8. Individualized and differentiated instruction

Children with hearing impairments are not a homogeneous group. Their access to language, communication histories, educational experiences, motor coordination and learning preferences may differ considerably. A sound instructional plan therefore begins with information about the individual child and is reviewed as the child develops. Some learners may need repeated exposure to each form and additional time to reproduce it. Others may recognize forms quickly but need support in combining them into words or connecting words with meaning. A learner may perform well in a quiet one-to-one setting but find it difficult to use dactyl speech during group interaction. These differences should inform the choice of tasks, the pace of teaching and the contexts in which skills are practised.

Differentiation may involve changing the number of forms introduced at one time, the length of a sequence, the complexity of vocabulary, the amount of visual prompting or the time allowed for a response. The teacher can begin with individual letters, proceed to syllables and familiar words, and then introduce phrases or short communicative exchanges. Learners who are ready can work with names, subject-specific vocabulary or more complex terms, while others consolidate foundational skills.

Collaboration with families and other professionals can help maintain consistency across environments. Families may be shown simple ways to practise familiar names and everyday vocabulary, provided that these activities fit the child's communication approach and do not create pressure. Teachers, special educators, speech-language professionals and sign-language specialists can coordinate goals where appropriate. The central principle is to make communication accessible and meaningful for the child.

9. Assessing progress in dactyl speech

Assessment should be ongoing and based on several complementary criteria. The first is visual recognition: can the learner distinguish the target form from other forms? The second is production accuracy: can the learner reproduce the form clearly and consistently? The third is sequencing: can the learner place forms in the correct order when representing a syllable or word? Further criteria include the ability to match dactyl sequences with printed words or pictures, understand another person's dactyl presentation and use the skill in a relevant communicative situation. Assessment should consider both accuracy and functional use. A learner might reproduce a form accurately in isolation

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but not recognize it in a longer sequence. Another learner may understand a word and use it appropriately but still need help with the exact manual form. These profiles call for different teaching responses. Records of progress can note which forms are secure, which are confused, how much prompting is needed and whether the learner can apply the skill in new contexts. The teacher should avoid judging progress solely by speed or by the number of forms memorized. The educational purpose of dactyl speech is to support communication and learning. Consequently, independence, confidence, understanding and purposeful use are also important indicators. Assessment findings should guide the next instructional steps and be shared with relevant team members in a respectful, constructive way.

10. Integrating dactyl speech into the wider educational process

Dactyl speech is often more useful when it is reinforced across the school day rather than confined to a single isolated lesson. Teachers may revisit key terms during language lessons, reading activities, mathematics, environmental studies and classroom routines. For example, a new subject-specific term can be shown in print, connected with its meaning and reviewed through dactyl spelling when this supports the learner's goals. Integration should be planned rather than improvised. Teachers need to agree on the target vocabulary, the form of visual support and the communication expectations for a task. Repeated use across contexts can help learners recognize that dactyl speech is a practical resource rather than a skill used only during drills. At the same time, not every word or activity requires dactyl spelling; the teacher should select it when it adds value to understanding or communication. Mechanical repetition alone is insufficient. A learner needs to understand not only how to produce a form but also when and why it is useful. Activities should therefore include meaningful purposes: identifying a person, clarifying a spelling, matching a term with a concept, or participating in an exchange. Teachers also need to model forms consistently. Ambiguous hand positions, unnecessary movements or inconsistent demonstrations may lead learners to acquire an inaccurate pattern. Professional competence in the relevant dactyl system is thus an important condition for effective instruction. The use of dactyl speech should be guided by respect for the child's language and communication rights. Educational success is not defined by adopting one single communication mode. It is defined by increasing the child's access to information, learning, relationships and participation. Dactyl speech can contribute to these aims when used flexibly, accurately and in coordination with the child's broader language development.

Conclusion

Working on dactyl speech with children with hearing impairments is an important area of special education and correctional-pedagogical practice. Dactyl speech can expand opportunities to access alphabetic information, clarify the spelling of words, support vocabulary learning and strengthen participation in classroom communication. Its visual-motor nature also creates structured opportunities to practise visual discrimination, attention, sequence memory and fine-motor coordination.

Effective teaching should be systematic, visually clear and communication-oriented. Instruction can progress from recognizing individual forms to reproducing them, combining them into syllables and words, and applying them in purposeful exchanges. Demonstration, guided practice, reproduction, communicative tasks and differentiated instruction can be combined according to the learner's needs. Visual materials, practical exercises and regular review support learning when they are accurate and appropriately paced. Dactyl speech should be connected meaningfully with written language, spoken-language learning where appropriate, sign language and concrete concepts. It should not be reduced to

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mechanical repetition or treated as a replacement for a complete language system. Each child's hearing profile, language experience, age, learning pace and communication preferences must inform instructional decisions. Assessment should therefore consider not only manual accuracy but also comprehension, independence and functional use. When teachers use dactyl speech consistently and purposefully across educational activities, it can become a practical resource for communication and learning. The quality of instruction depends on the teacher's competence, the accessibility of the learning environment, collaboration among relevant adults and a commitment to the child's individual development. Systematic and individualized work can support greater participation in educational and social settings.

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