Εκπαιδευτικές Διαδρομές

Τόμ. 1, Αρ. 2 (2025)

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Αξιολόγηση της ορθογραφικής ικανότητας και εφαρμογή στρατηγικών παρέμβασης για τη βελτίωσή της.

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doi: 10.12681/edro.39912

Assessing orthographic competence and implementing intervention strategies to improve orthographic competence. The case of a gifted GFL learner

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Περίληψη

Σύγχρονες εμπειρικές έρευνες που προσανατολίζονται στον τομέα της Ειδικής Αγωγής και Εκπαίδευσης υποδεικνύουν την αλληλεπίδραση πολυδιάστατων μεταβλητών για τον εντοπισμό και την προώθηση του δυναμικού των χαρισματικών και ταλαντούχων μαθητών/τριών. Σε αυτήν τη μελέτη περίπτωσης, ενσωματώσαμε τη διαγνωστική αξιολόγηση για να καταγράψουμε την ορθογραφική ικανότητα ενός γλωσσικά ταλαντούχου μαθητή Γερμανικής ως ξένης γλώσσας. Το υποκείμενο της έρευνας είναι ένα αγόρι 8 ετών που μαθαίνει Γερμανικά ως δεύτερη ξένη γλώσσα εδώ και δύο χρόνια. Για την αξιολόγηση της ορθογραφικής του ικανότητας, χρησιμοποιήσαμε τη Δοκιμασία Ορθογραφίας για μαθητές/ήτριες Γερμανικής ως Β΄ ξένης γλώσσας, το οποίο χορηγήθηκε πριν και μετά την παρέμβαση. Η παρέμβαση που παρουσιάζεται σε αυτό το άρθρο βασίζεται σε μια συγκεκριμένη ορθογραφική δυσκολία, την κεφαλαιοποίηση των ουσιαστικών στη γερμανική γλώσσα και συνδυάζεται με τη διαδικασία αξιολόγησης, η οποία προηγήθηκε. Ποσοτικά δεδομένα συλλέχθηκαν επιπλέον από το Ερωτηματολόγιο Διεξαγωγής του Μαθήματος για τον προσδιορισμό των ατομικών μαθησιακών στυλ και ενδιαφερόντων. Σε αυτήν τη μελέτη περίπτωσης σχεδιάσαμε πολυαισθητηριακές και ψηφιακές δραστηριότητες παρέμβασης, ώστε να καλύψουμε τις ανάγκες ενός χαρισματικού μαθητή της Γερμανικής ως ξένης γλώσσας. Εφαρμόσαμε πολυαισθητηριακές προσεγγίσεις για να ανταποκριθούμε στις προτιμήσεις του μαθητή και ενσωματώσαμε ψηφιακά εργαλεία για να ενισχύσουμε την εμπλοκή και την ενίσχυση της μάθησης. Η ανάλυση μετά την παρέμβαση αποκάλυψε σημαντική βελτίωση στην ορθογραφική ικανότητα του μαθητή.

Λέξεις-κλειδιά: χαρισματικοί/ές μαθητές/ήτριες, δραστηριότητες παρέμβασης, διαφοροποιημένηδιδασκαλία, συμπεριληπτική διδασκαλία, διαγνωστική αξιολόγηση

Abstract

Contemporary empirical research in the field of Special Education highlights the interaction of multidimensional variables in identifying and fostering the potential of gifted and talented students. This case study incorporates a diagnostic assessment to evaluate the spelling proficiency of a linguistically talented student learning German as a foreign language. The research subject is an 8-year-old boy who has been learning German as a second foreign language for two years.To assess the student's spelling ability, the Spelling Test for Students of German as a Second Foreign Language was administered both before and after the intervention. The intervention presented in this study focused on a specific spelling difficulty: the capitalization of nouns in German. This was combined with a prior diagnostic assessment process. Quantitative data were additionally collected using the Course Conduct Questionnaire to identify individual learning styles and interests.In this case study, multisensory and digital intervention activities were designed to address the needs of a gifted learner of German as a foreign language. Multisensory approaches were employed to align with the student's preferences, while digital tools were integrated to enhance engagement and learning reinforcement. Post-intervention analysis revealed significant improvement in the student's spelling proficiency.

Keywords: gifted learners, intervention activities, differentiatedinstruction, inclusive instruction, diagnostic assessment

Introduction

In this case study, we attempt to assess the orthographic competence of a linguistically gifted GFL learner. The assessment process presented in this article is combined with individualized instruction through a multifaceted intervention program, which follows. The subject is an 8-year-old boy, learning German as a foreign language for two years. We used the Spelling Test for GFL learners (Tsakalidou, 2020, 2021) to record the pre-intervention and post-intervention performance on orthographic competence. Quantitative data were also gathered from the Course Conduct Questionnaire (Tsakalidou, 2020, 2021) to define the individual learning styles and interests. Afterwards, we decided to focus on a specific area of difficulty, during the intervention, namely capitalisation.

In this case study, we designed a multisensory and digital intervention to address the orthographic needs of a gifted learner of German as a Foreign Language (GFL). The intervention specifically targeted the capitalization of nouns in German—a syntactic marker that poses challenges for learners. The "Course Conduct Questionnaire" (Tsakalidou, 2020, 2021a, 2021b) was also utilized to determine his individual learning styles and interests.We implemented multisensory approaches to cater to the learner's preferences and integrated digital tools to enhance engagement and reinforce learning.

Theoretical Background

According to Briançon (2019), it is because Otherness teaches something essential to the human being that it has a role to play in the educational sciences. Terms such as differentiated instruction, inclusion and mixed-ability classrooms have become prevalent in contemporary educational thinking. Yet identifying giftedness, uniqueness and exceptionality remains a challenging procedure. Giftedness is neither a measurement of high IQ scores nor an equivalent of high achievement in school. On the contrary, it is a multidimensional concept that is reflected in the learner’s behaviors and individual efforts (Sternberg & Davidson, 2005). This special population group includes learners (a) from low socio-economic strata, (b) from different cultural backgrounds (c) with vulnerability to social and emotional maladjustment (d) with twice exceptionality and co-occurring learning disabilities.

Therefore, gifted learners face various risk factors that could interfere in their optimal development and need to be supported through special educational provision (Papadopoulou & Tsakalidou, 2022, 2023).

Following the foreign language learning and self-realisation journey of this heterogeneous population, educators will encounter learners:

➢ who are thriving and are motivated internally and externally to express their linguistic gifts, creativity and virtuosity according to the developmental stage of their cognitive abilities. Their identity is acknowledged and accepted within a learning environment open to questioning, experimentation, collaborative ideas, and creative products of interest.

➢ who aren't thriving and are internally struggling for their ideal of perfection in an imperfect world. These self-critical learners use their linguistic gifts to test hypotheses about the foreign language by comparing its structure with other languages they already know (Deveau, 2006). They read self-selected books, hear the sounds, intonation and rhythm of the foreign language through songs and envision developing their language skills in real-life communication situations with native speakers. They thus exhibit the same gifted behavioral qualities but have a significant achievement gap compared to the previous learner group.

Giftedness and foreign language learning

Renzulli's Three-Ring Conception of Giftedness posits that giftedness arises from the intersection of above-average ability, creativity, and task commitment. This model suggests that high intellectual ability alone does not guarantee high creativity; rather, the confluence of these traits, along with strong task commitment, characterizes gifted individuals (Renzulli, 1986).

Contemporary educational paradigms emphasize equal learning opportunities for all students, including those with disabilities and special educational needs. In Greece, learners exhibiting exceptional abilities are recognized as having special needs. However, national educational provisions for gifted learners are lacking, with support limited to isolated practices (Papadopoulou & Tsakalidou, 2022, 2023). The right to equal learning opportunities undoubtedly also concerns learners with disabilities and special educational needs, whereby gifted learners are often not

associated with such. In Greece learners who have one or more mental abilities and talents developed to an extent that far exceeds what is expected for their age group belong to the student population with special needs (3699/2008 - Government Gazette 199/A/2-10-2008). However, there is no national educational provision or special state planning for the case of gifted learners, but rather isolated practices are observed (Papadopoulou & Tsakalidou, 2022, 2023). In the relevant literature and previous research, the reasons for ensuring learning opportunities for gifted learners are well-established, clear, and important.

Developing cognitive potential is crucial for individual learners, while fostering communication skills is essential at the classroom level, particularly in cooperative learning environments—a key component in gifted education. Variations in learning needs exist among gifted students, with more advanced learners requiring enhanced support. Providing enriched learning experiences can serve as a rationale for offering advanced-level opportunities to all students, reflecting a democratic ideal that accommodates individual differences and promotes talent development, especially among at-risk students traditionally excluded from advanced curricula.

Creative productivity is present across all student populations. Educators should aim to offer every student the opportunities, resources, and encouragement necessary to achieve their full potential, supporting continuous engagement in both required and self-selected activities. The initial stage of giftedness development involves a child's exploratory engagement with a field of interest. Studies of talented individuals indicate that early exposure to fundamental skills through competent mentors is common. Interdisciplinary practices for nurturing gifted behaviors include pluralizing instruction and assessment methods to cater to multiple intelligences. Gardner's Multiple Intelligences Theory advocates for teaching approaches that address the diverse intelligences of each learner.

Educational innovations and multidisciplinary approaches have advanced the understanding of gifted learners' needs and potential. Cognitive perspectives highlight qualitative traits such as motivation, task commitment, creativity, and wisdom, acknowledging the significance of psychosocial factors in the development of gifted children. Recent neuroscientific research supports these views.

Recognizing giftedness as an opportunity enables educators to focus on individual learner development and the implementation of effective, innovative teaching methods. Renzulli's Three-Ring Conception emphasizes that creative

productive giftedness involves developing original ideas, products, artistic expressions, and knowledge designed to impact specific audiences. Learning environments that promote this form of giftedness encourage the application of knowledge and thinking processes in integrated, inductive, and problem-oriented ways, transforming students into active inquirers.

Differences in learning needs exist within and across students in the gifted range, with more advanced students requiring greater learning support (Reis & Renzulli, 2009). How students respond to enriched learning experiences should be used as a rationale for providing all students with advanced-level follow-up opportunities. This approach reflects a democratic ideal that accommodates the full range of individual differences in the entire student population, and it opens the door to programming models that develop the talent potentials of many at-risk students who traditionally have been excluded from anything but the most basic types of curricular experiences.

Moreover, creative productivity exists in all school populations. The educators' goal should not be to certify some students as gifted and others as nongifted but rather to provide every student with the opportunities, resources, and encouragement necessary to achieve his or her maximum potential, to support continuous escalations of student involvement in both required and self-selected activities (Renzulli, 2005).

The first developmental stage of giftedness builds on romance with the field of endeavor as the child playfully explores and discovers its dimensions (Bloom, 1985). Talented young individuals such as concert pianists, Olympic swimmers, world-class tennis players, research mathematicians, and others were the subjects of Bloom's study. They all came from child-oriented families and learned the fundamental skills for their chosen field through competent coaches and educators. In recent years various interdisciplinary practices for developing gifted behaviours in diverse areas of learning and expression have been proposed: (a) the plurality of instruction and assessment methods according to the needs and multiple intelligences of all learners (Gardner, 2013). Focusing on academic giftedness, Gardner introduced in his book *Frames of Mind* (1983) his widely discussed Multiple Intelligences Theory (MIT). The interplay between diverse intelligences and a multisensory approach to teaching methods can be traced within this framework. Gifted children with bodily-kinesthetic intelligence, for instance, use their mental abilities to coordinate body movements and

have the facility to learn through different modes of physical interactions (Gardner, 1983). The MIT therefore established the idea that educators should *pluralize* instruction and assessment methods according to the needs and multiple intelligences of each individual learner (Gardner, 2013).

Educational innovation combined with various multidisciplinary approaches in theory and practice have offered new ways of understanding the needs and developing the potential of gifted learners. From the perspective of cognition qualitative characteristics in the manifestation of giftedness, namely motivation, task commitment, creativity, and wisdom, recognising the importance of psychosocial factors in the growth of gifted children (Renzulli, 2016; Sternberg, 2015). This is also supported in recent neuroscientific research (Gagné, 2005˙ Heller, Perleth& Lim, 2005˙ Renzulli, 2005˙ Roznowski, Reith, & Hong, 2000).

It is important to view giftedness primarily as an opportunity for the teacher to establish individual learner development and provide an effective way for acquiring expertise in innovating didactic methods.

The selected *modus operandi* of expressing creative productivity by gifted learners' potential for achievement, is thus promoted in the *Three Ring Conception of Giftedness* (Renzulli, 1999).

Creative productive giftedness describes those aspects of human activity and involvement where a premium is placed on the development of original ideas, products, artistic expressions, and areas of knowledge that are purposefully designed to have an impact on one or more target audiences. Learning situations that are designed to promote creative productive giftedness emphasize the use and application of knowledge and thinking processes in an integrated, inductive, and real-problem-oriented manner. The role of the student is transformed from that of a learner of prescribed lessons and consumer of information to one in which he or she uses the modus operandi of the first-hand inquirer. I have written in some detail about this transformed role of the learner (Renzulli, 1982), and will only say at this point that it serves as the main rationale for the Type III dimension of the Enrichment Triad Model (discussed later in this article).

Linguistic giftedness often emerges around age 8 in its first developmental stage, which sets the priority for the educator to provide adequate linguistic stimuli and enhance the GFLlearner’s achievement potential. Applying gifted education strategies within general education is supported by research on human abilities,

including works by Bloom (1985), Gardner (1983), Renzulli (1978, 1999), and Sternberg (1986, 2000).

Research objectives and research questions

The primary research objectives of this case study were twofold. The first objective was to identify and document the spelling difficulties experienced by the student in German as a second foreign language. To achieve this, a spelling test tailored to the beginner's level (A1) was administered. Following this, a quantitative and qualitative error analysis was conducted to categorise and understand the nature of the spelling errors. The second objective was to develop and implement an intervention plan tailored to address the specific difficulties identified through the error analysis. Finally, the effectiveness of the intervention program was assessed by administering the same spelling test post-intervention and recording the results for comparison.

Here are the research questions aligned with the outlined research objectives:

1.What are the specific spelling difficulties encountered by the student when writing in German as a second foreign language, based on a beginner's level (A1) spelling test?

2.How can a tailored intervention plan address the identified spelling difficulties, and what strategies are most effective in improving the student's spelling skills in German?

3.Which tools or strategies are appropriate for the intervention plan taking the needs and preferences of the gifted GFLlearner into consideration?

4. What is the impact of the intervention program on the student's spelling performance, as assessed by comparing the results of pre-intervention and post-intervention spelling tests?After implementing the intervention, is there an improvement in the orthographic skills according to theSpelling test used during the assessment phase?

The subject of the case study

The subject of this case study is an 8-year-old boy who has been learning German as a foreign language for two years. Concurrently, he has been studying

English as his first foreign language for the same duration. The child exhibits a high level of interest in developing proficiency in both languages and demonstrates outstanding academic performance across various school subjects.

His classroom teacher observes that he possesses the cognitive and academic abilities to excel in lessons designed for the next grade level. To challenge him appropriately, she assigns advanced tasks, such as mathematics problems aligned with the curriculum of the subsequent class. She has identified his exceptional aptitude in both linguistic and artistic domains, including music and visual arts.

Moreover, his foreign language instructors report that his language competence is advanced for his age, with mastery of vocabulary and grammatical structures typically expected of older learners. These observations suggest the child displays traits of giftedness, particularly in language acquisition and creative disciplines.

Research methodology

The research process is visually represented in Figure 1, which outlines the sequential steps taken to achieve the study's objectives. This figure provides a clear depiction of the methodological framework, beginning with the administration of the spelling test, followed by the error analysis, the development and implementation of the intervention plan, and concluding with the evaluation of the intervention outcomes.

[Figure 1]

In the present study, we meticulously examine steps 3, 4, and 5 of the proposed intervention model, which is grounded in extant research findings. This model aims to elucidate how an educator-researcher, possessing multifaceted expertise, can effectively address giftedness throughout the cyclical process of action and interdisciplinary reflection. Linguistic giftedness manifests during this developmental stage, necessitating educators to provide appropriate linguistic stimuli to enhance the achievement potential of learners of German as a Foreign Language (GFL).

The orthographic assessment indicates that the learner's performance deficiencies are primarily attributed to the lack of an effective strategy for assimilating the capitalization of German nouns. To address this, the intervention program incorporates a diverse array of experimental materials, encompassing monosyllabic to polysyllabic words, international terms, and multi-word items.

Regarding pedagogical methodology, the intervention integrates multisensory activation and media literacy, thereby optimizing the multimodal learning effect. The subsequent section delves into individualized instruction from various interdisciplinary perspectives, profiling the learner's interpersonal and intrapersonal motivations in alignment with his cognitive and socio-affective development.

Diagnostic instrument

The learner's orthographic skills in German as a second foreign language were assessed by the Spelling Test (Tsakalidou, 2020, 2021a, 2021b). This diagnostic assessment tool was developed based on a standardized test for spelling in Greek as a L1 (Mouzaki et al., 2010, as cited in Tsakalidou, 2021b) and was used during Phase 1 of the research in order to record the learner's specific spelling strengths and difficulties. Regarding the validity and internal reliability of the instrument, the Spelling Test specifications and intercorrelations among the items showed high internal consistency with a Cronbach's alpha coefficient of .944 (Tsakalidou, 2021a, 2021b). Worth mentioning is furthermore that the spelling error types examined in the quantitative and qualitative data analysis consisted of Grammatical errors (Gr1), Phonological errors (Ph1–Ph14) and Other errors (O1–O6), as shown in Tables 1–2. From the student's pre intervention spelling performance on the 30 words with gradually increasing syllable difficulty and grapheme complexity, the results obtained enable the teacher to have a summative overview of the learner’s spelling difficulties and most common mistakes, in order to plan intervention.

Identifying the spelling difficulties

As seen in Table 1 the most common errors are substitution of uppercase/lowercase errors (O5) in 10 words. Furthermore, another common error type is phoneme substitution (Ph2), as well as simple consonant cluster simplification

(Ph12), in specific errors with the use of the h with a lengthening effect on the preceding vowel.

[Table 1]

When summarising the spelling errors in the following synoptic Table (Table 2), it is evident that the learner's most common error type is the substitution of uppercase/lowercase letters. Therefore, we decided to focus our intervention in this field. It should be noted, that this error is quite common for Greek students learning German as a foreign language (Tsakalidou, 2020), as the capitalisation of nouns is used only for all proper nouns (words that name a specific person, place, organization, or thing) in both the L1 (Greek), as well as in the FL1 (English).

[Table 2]

Qualitative error analysis of Pre-Intervention Spelling Performance

The subject's pre-intervention spelling performance in German as a foreign language (GFL) was evaluated using a beginner-level (A1) Spelling Test. The analysis revealed the following:

- Overall Performance: Correct spellings: 16 words (53.3%). Additional correct spellings (phonologically and orthographically correct but with capitalization errors): 8 words (80%).
- Categorization of Spelling Errors:

a. Capitalization Errors (O5): A recurrent error due to interference between English and German capitalization rules. Example: Lowercase nouns were used instead of uppercase (e.g., hausaufgaben instead of Hausaufgaben).

b. Phoneme Substitution (Ph2): Confusion of visually or phonetically similar phonemes, for example: [b/d]: dist instead of bist. ♦ [j/y]: yiare instead of Jahre. ♦ [ü/u]: funfzen instead of fünfzehn. ♦ /f/ written as <ph>: elephant instead of Elefant. ♦ [a/o]: houseafgaben instead of Hausaufgaben.

c. Syllable and Phoneme Omissions and Substitutions, for example: fofgen instead of fünfzehn ♦ draign instead of dreizehn ♦ mermelad instead of Marmelade ♦ Toinland instead of Deutschland.

d. Mastery of Diphthongs and Complex Clusters: The learner showed significant challenges with German diphthongs (au, ei, ie, eu) and phoneme clusters. In specific:

- Errors in diphthongs: aous instead of aus ♦ svai instead of zwei ♦ doits instead of deutsch.
- Errors in <sch> cluster: Toinland instead of Deutschland.
- Errors in [ß]: haist instead of heißt.
- Errors in [z] pronounced as <s>: zi instead of sie.

Implications for Intervention Planning

The error analysis provided insights into the learner's specific challenges. The findings indicated difficulties in mastering foundational aspects of German spelling, including phoneme-grapheme correspondence, capitalisation rules, and complex phoneme clusters. These errors align with patterns commonly observed in foreign language learners and informed the development of a targeted intervention plan.

Defining learning style and interests

In this study, a questionnaire was utilized to assess the learning styles and interests of a gifted learner of German as a Foreign Language (GFL) (Tsakalidou, 2020, 2021a, 2021b). The questionnaire, administered orally to the student, encompassed six categories:

1. Enjoyment of specific GFL activities: Evaluating the student's enthusiasm for various classroom tasks, such as singing songs or completing exercises.
2. Interest in German cultural topics: Identifying subjects related to German civilization that the student finds engaging, including German films, notable German inventors, or prominent German football teams.
3. Preferred learning materials: Determining the student's favored resources during GFL lessons, such as textbooks, worksheets, or DVDs.
4. Preferred learning methods: Understanding how the student prefers to acquire new information, whether through listening to explanations, observing demonstrations, or other approaches.

5. Preferred homework activities: Identifying the types of assignments the student favors, such as exercises from activity books, online tasks, or projects.

6. Perceived difficulties in learning German: Recognizing areas where the student encounters challenges, such as pronunciation, grammar, or spelling.

The student was instructed to rate each item on a scale from 0 to 10, with 10 indicating the highest level of preference or difficulty. Upon analyzing the student's responses, the following conclusions were drawn:

- High enjoyment of interactive activities: The student expressed a strong preference for engaging in activities like singing songs and participating in exercises, indicating a kinesthetic and auditory learning style.
- Interest in German cultural topics: The student showed a keen interest in subjects related to German civilization, particularly German films and notable German inventors, suggesting a preference for cultural and historical content.
- Preference for visual learning materials: The student favored using DVDs and worksheets over textbooks, indicating a visual learning preference.
- Preference for observational learning methods: The student preferred learning new information through observation, suggesting a visual learning style.
- Interest in project-based homework: The student favored project-based assignments over exercises from activity books or online tasks, indicating a preference for hands-on, creative tasks.
- Challenges with pronunciation and grammar: The student identified pronunciation and grammar as areas of difficulty, highlighting specific linguistic challenges to address.

These insights into the student's learning preferences and challenges are crucial for tailoring instructional strategies to enhance the learning experience and address specific areas of difficulty.

Intervention

The multifaceted intervention programresponds to the challenge ofinterdisciplinary approaching giftedness through various linguistic stimuli and instructional materialtoenrich the orthographic learning experience of the GFLlearner.For corresponding to thecomplexity of a gifted mind, it was of great importanceto navigate the learner across the *beauty* of the foreign language. Words

that are associated with memories, international words that reflect theintercorrelations between thelanguage systems, and multi-word items that are nearing the communicative paradigm inreal-life situational contexts,were integratedfor experimentation.The added value of the programisconstituted bythe learner being an active participant in a multisensory and digital recreation of the German capital letters (Figure 2).

[Figure 2]

Results of the intervention. Post-Intervention Evaluation

The Spelling Test was reused in the post-intervention phase to assess the efficacy of the tailored intervention strategies. The quantitative and qualitative comparison provided insights into improvements and areas needing further focus (Table 3).

[Table 3]

Worth mentioning are also some “hidden”variables that were taken into consideration, whichincludedthe combination of cognitive challenging tasks, the utilisationof the learner’s multilingual identity, as far as a specific spelling difficulty, namely the capitalisation of nouns in the German language, was concerned.

The intervention was designed to target the specific spelling difficulties identified in the pre-intervention assessment. The post-intervention results indicated improvements in the student's spelling performance, suggesting that the tailored intervention was effective. Therefore, the hypotheses that a targeted intervention can address specific spelling difficulties and lead to measurable improvements in spelling performance were confirmed.

Discussion

The intervention was designed to target the specific spelling difficulties identified in the pre-intervention assessment. The post-intervention results indicated

improvements in the student's spelling performance, suggesting that the tailored intervention was effective. Therefore, the hypotheses that a targeted intervention can address specific spelling difficulties and lead to measurable improvements in spelling performance were confirmed (Figure 3).

O5 (Substitution of Uppercase and Lowercase Letters): The errors decreased from 10 (5.6%) to 1 (0.6%), indicating a 90% reduction. This significant improvement suggests that the intervention effectively addressed capitalization issues, which are common interference errors between English and German.

O6 (Specific Orthographic Rule Errors): The single error in this category was completely eliminated post-intervention, showing a 100% reduction. This suggests that targeted instruction on specific orthographic rules was successful.

Ph2 (Phoneme Substitution Errors): Errors reduced from 5 (3.2%) to 2 (1.3%), a 60% reduction. While there is notable improvement, ongoing focus on distinguishing similar phonemes is recommended.

Ph4 (Phoneme Omission Errors): A reduction from 2 (1.3%) to 1 (0.6%) was observed, equating to a 50% decrease. This indicates progress, though further practice may be beneficial.

Ph6 (Phoneme Addition Errors): The single pre-intervention error was eliminated, showing a 100% reduction, suggesting effective remediation in this area.

Ph12 (Errors Involving Diphthongs and Complex Clusters): Errors decreased from 3 (10.3%) to none, indicating a 100% reduction. This reflects significant mastery of diphthongs and complex clusters post-intervention.

[Figure 3]

Conclusion

The data demonstrates that the tailored intervention was effective in reducing spelling errors across multiple categories, with complete elimination in several areas. The most substantial improvements were observed in the correct application of capitalization rules (O5) and the accurate spelling of diphthongs and complex clusters (Ph12). These findings confirm the hypothesis that targeted interventions can

significantly enhance spelling proficiency in specific error categories, also in the case of a linguistically gifted learner.

It is important to mention, that giftedness is neither a measurement of high IQ scores nor an equivalent of high achievement in school. On the contrary, it is a multidimensional concept that is reflected in the learner's behaviors and individual efforts (Sternberg & Davidson, 2005). Furthermore, the importance of an interdisciplinary approach should be recognised. Gifted learners differ from their non-gifted peers in many aspects. Regular classroom learning-teaching interactions in theircapacity to generate intuitive theories about the topicsthey learn. Their networks of meanings contain bothlinks that are programmed by the teaching and links thatare, at one time, more personal and intuitive. Studies ofthe neuropsychological processing of these students areconsistent with this. Synthesized with psycho-educationalresearch, they provide the opportunity for resolvingcurrent issues in our understanding of giftedness andefficacious educational provision. Therefore, as shown in this case study, a multifaceted intervention programme, taking multisensory activities as well as digital activities in account, has a high probability of being effective in the case of a gifted learner.

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Figures and tables

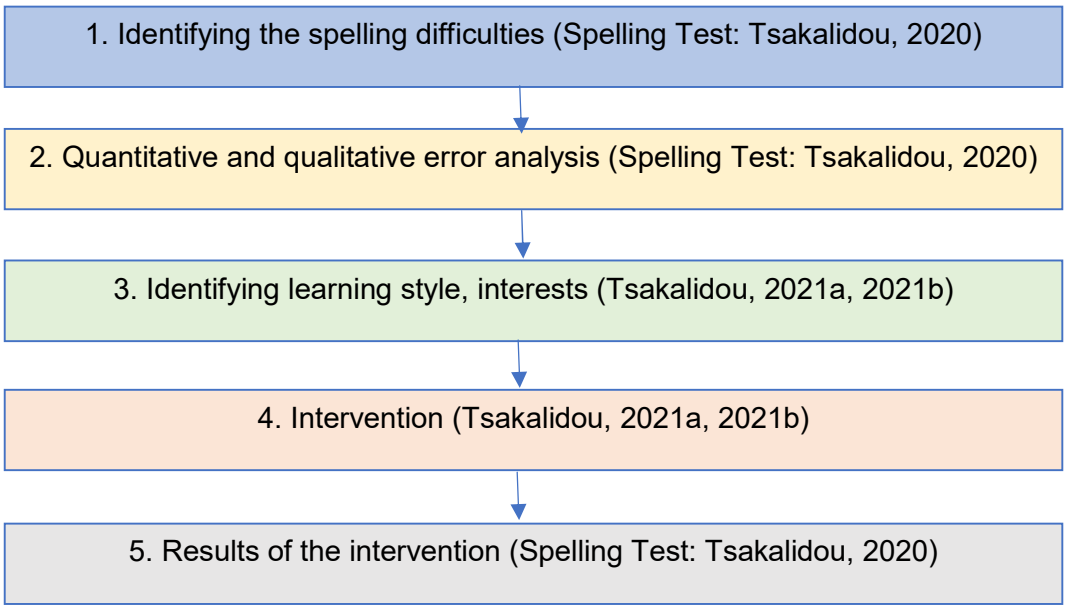

Figure 1 - Research process

Table 1 – Synoptic table of spelling difficulties (pre-intervention)

	Word	Syllables	Phonemes	Phonological errors				Other errors	
				Ph2	Ph4	Ph6	Ph12	O5	O6
3	bist	1	4	**d**			st		
12	Foto	2	4					**1**	
13	Musik	2	5					**1**	
14	Tennis	2	5				nn	**1**	
17	Jahre	2	4	**y**	**i**		**hr**		
19	fünfzehn	2	7	**u**			nf, **hn**		**ü**
21	Lampe	2	5				mp	**1**	
22	Fußball	2	6				ßb, ll	**1**	
23	dreizehn	2	6				dr, **hn**		
24	Telefon	3	7					**1**	
25	Elefant	3	7	**ph**			nt	**1**	
26	Basketball	3	9				sk, tb, ll	**1**	
28	Marmelade	4	9					**1**	
29	Hausaufgaben	4	12	**o**	**e**	**u**	fg	**1**	
Learner's sum				**5**	**2**	**1**	**3**	**10**	**1**
Total sum		**56**	**157**	**157**	**157**	**157**	**29**	**179**	**2**

(Tsakalidou, 2020, pp. 449-455)

Table 2 - Detailed table of spelling errors (pre-intervention)

Code	*Error type	Example	Number of errors	Chances of error	Ratio %(f %)
O			**Other errors**		
O5	Substitution of uppercase/ lowercase letters	foto (Foto), musik (Musik), tennis (Tennis), lampe (Lampe), fußball (Fußball), telefon (Telefon), elephant (Elefant), basketball (Basketball), marmelade (Marmelade), houseafgaben (Hausaufgaben)	10	179	**5,6%**
O6	Omitting Umlaut	funfzen (fünfzehn)	1	2	**50%**
Ph			**Phonological errors**		
Ph2	Phoneme substitution	dist (bist), yiare (Jahre), funfzen (fünfzehn), elephant (Elefant), houseafgaben (Hausaufgaben)	5	157	**3,2%**
Ph4	Adding a phoneme	yiare (Jahre), houseafgaben (Hausaufgaben)	2	157	**1,3%**
Ph6	Omitting a phoneme	houseafgaben (Hausaufgaben)	1	157	**0,6%**
Ph12	Simple consonant cluster simplification	yiare (Jahre), funfzen (fünfzehn), dreizen (dreizehn)	3	29	**10,3%**

(Tsakalidou, 2020, pp. 449-455)

A. Multisensory learning	
Objectives	Visual discrimination, writing, grapheme-phoneme matching
Materials	Worksheets, colored pencils, crayons, playdough, sand, string

Instruction

The teacher provides two worksheets that are equipped with a variety of experimental items ranging from monosyllabic to polysyllabic German nouns and verbs (f.i. *Ball, spielen*, *Musik, malen, tanzen, schwimmen, Basketball, Marmelade*), as well as international words (f.i. *lila, singen, Fußball, skaten, Stadion, Elefant, beginnen, Schokolade*). For each capital letter that the learner identifies, he/she self-selects two different tasks from the following:

Άσκηση			Β, b						
1		σχηματίζω το γράμμα τρέχοντας							
2		σχηματίζω με το σώμα μου	X						
3		σχηματίζω με διάφορα υλικά (π.χ. με σπάγκο)							
4		πλάθω							
5		γράφω στον αέρα	X						

6		γράφω στην πλάτη	
7		γράφω στο τραπέζι με το δάχτυλό μου	
8		γράφω στην άμμο	
9		γράφω με κηρομπογιές	X
10		γράφω με ξυλομπογιές	

1. *I form the letter* by running
2. *I form the letter* with my body
3. *I form the letter* with string
4. *I form the letter* with playdough
5. *I write the letter* in the air
6. *I write the letter* on someone's back
7. *I write the letter* on the table with my finger
8. *I write the letter* in the sand
9. *I write the letter* with crayons
10. *I write the letter* with colored pencils

While the learner is performing each multisensory task, he/she is required to reproduce the sound of the uppercase letter out loud or in a whisper. For the consonant clusters <Sch> and <St>, a clarification of the pronunciation /ʃ/ is provided.

(Tsakalidou, 2021a, pp. 50-51)

B. Digital learning (A)	
Objectives	Visual discrimination, writing, grapheme-phoneme matching, grammar
Materials	Online exercise (Wordwall activity) - https://wordwall.net/de/resource/11588087/quiz-nomen
Instruction	What is the correct category of the word? Noun, verb or adjective?

Screen shot	

B. Digital learning (B)	
Objectives	Visual discrimination, writing, grapheme-phoneme matching, grammar
Materials	Online exercise (Wordwall activity) - https://wordwall.net/de/resource/10263595/nomen-verben-adjektive
Instruction	Which of the given words are nouns?
Screen shot	

Figure 2 - Intervention activities

Table 3 - Spelling errors (pre- and post-intervention evaluation)

Code	Pre	Pre (%)	Post	Post (%)
O5	10	5,6%	1	0,6%
O6	1	50%	0	0%
Ph2	5	3,2%	2	1,3%
Ph4	2	1,3%	1	0,6%
Ph6	1	0,6%	0	0%
Ph12	3	10,3%	0	0%

Figure 3 -Pre and post spelling test results