

LEARNING MATERIALS FOR GREEK SIGN LANGUAGE AS A FIRST LANGUAGE

Materiais de aprendizagem para a Língua De Sinais Grega como primeira língua

Dr. Maria Mertzani⁴⁹

RESUMO

The National Strategic Reference Framework (NSRF) the years 2007-2013 realised the project entitled "Design and development of accessible educational materials for students with disability-Horizontal Action" with the scope to create educational materials for children with special needs. In this, Greek Sign Language (GSL) as a first language (L1) in school education was followed, based on the new Special Education Law 3699/2008 and the 2004 GSL curriculum, and six types of educational materials for the learning of the language were produced for the first time in Greek national educational system. This paper aims at discussing the design and principles on which the materials were created, focusing on

ABSTRACT

O *National Strategic Reference Framework (NSRF)* realizou, nos anos 2007-2013, o projeto intitulado "Concepção e desenvolvimento de materiais educativos acessíveis para alunos com deficiência - Ação Horizontal" com o objetivo de criar materiais educativos para crianças com necessidades especiais. A Língua de Sinais Grega (GSL) como primeira língua (L1) na educação escolar foi seguida, com base na nova Lei de Educação Especial 3699/2008 e no currículo de 2004 GSL, e foram produzidos seis tipos de materiais educativos para a aprendizagem da língua pela primeira vez no sistema educacional nacional grego. Este artigo tem como objetivo discutir o desenho e os princípios sobre os quais os materiais foram criados, com foco em três questões principais: (i) o

⁴⁹ GreekForYou Ltd., Bristol, U.K.; Universidade Federal de Pelotas-UFPEL, Pelotas, RS, Brasil; CAPES February 2014 - March 2016; maromertzani@yahoo.gr

three main questions: (i) what is the pupil expected to do using the materials? (ii) who with? and (iii) with what content? The scope is to inform sign language learning about implementing visual technology in deaf education and within sign bilingualism.

que o aluno espera fazer usando os materiais? (ii) com quem? E (iii) com que conteúdo? O escopo é informar a aprendizagem da língua de sinais sobre a implementação de tecnologia visual na educação de surdos e dentro do bilinguismo de signos.

PALAVRAS-CHAVE

Sign language materials; Greek Sign Language, Visual technology; Sign bilingualism.

KEYWORDS

Material em língua de sinais; Língua-gem gestual grega, tecnologia visual; bilinguismo em língua de sinais.

Introduction

Within the National Strategic Reference Framework (NSRF) the years 2007-2013, the project entitled "Design and development of accessible educational materials for students with disability-Horizontal Action" (code MIS 299743 and SAE 2010SE84580212) was realised with the scope the creation of educational materials for children with special needs. In this, Greek Sign Language (GSL) as a first language (L1) in school education was followed, based on the new Special Education Law 3699/2008) and special GSL curriculum⁵⁰, and educational materials for the learning of the language were produced for the first time in Greek national educational system. In particular, the following five digital titles were created:

- (i) the title "I see and learn" (in Greek, "Βλέπω και μαθαίνω"; accessible at: <http://prosvasimo.gr/el/gia-mathites-me-provlimata-akohs/vlepw-kai-mathainw>) for children in the kindergarten (4-5 years old);
- (ii) the title "Look at me. I'm telling you ..." (in Greek, "Κοίτα με! Κάτι σου λέω..."; accessible at: <http://prosvasimo.gr/el/koita-me-kati-sou-leo>) for the first two grades of primary education (Grades A and B), referring to children aged 6-8 years old;

⁵⁰ The first GSL curriculum developed in 2004, after the recognition of GSL (Law 2817/2000) as the official language of the deaf in the national educational system. It was part of bilingual curricula in primary and secondary national education, which, at that time, were not accompanied by learning materials.

- (iii) the title “Language through my eyes!” (in Greek, “**Η Γλώσσα μου με τα Μάτια μου!**”); accessible at: <http://prosvasimo.gr/el/gia-mathites-me-provlimata-akohs/h-glwssa-me-ta-matia-mou>) as supportive material for the above grades;
- (iv) the title “I learn the Signs” (in Greek, “**Μαθαίνω τα Νοήματα**”); accessible at: <http://prosvasimo.gr/el/gia-mathites-me-provlimata-akohs/mathainw-ta-nohmata>) as a basic GSL grammar workbook for the first grades of primary school;
- (v) the “GSL dictionary” (in Greek, “**Λεξικό Ελληνικής Νοηματικής Γλώσσας**” accessible at: <http://prosvasimo.gr/el/polimesiko-uliko/ekpaideutiko-logismiko#Leksiko-Elhnikhs-Nohmatikhs-Glwssas>); and,
- (vi) Seventeen GSL stories (accessible at: <http://prosvasimo.gr/el/sullogi-apo-paidika-paramuthia-sth-nohmatikh>) for all grades.

These materials are developed according to the philosophy and principles of sign bilingualism in the 2004 GSL Curriculum, and are accompanied by a teacher’s guide and installation manuals, since they are provided in digital format (on DVDs and/or online) as Open Educational Resources⁵¹ (OERs) (Kourbetis & Boukouras, 2014, p. 349). The following sections aim at reviewing the materials, discussing their design and theory of development in relation to established international tradition of producing sign language (SL) materials. Firstly, a brief review of this tradition is presented below.

Visual sign language learning

The study of SLs require extended use of visual material such as video, since there are limited opportunities for studying the language outside the classroom and learners need to view its actual performance. Usually, hearing learners of a spoken language hear themselves speaking and thus, are able to monitor their output and compare it with native speakers and/or practise the language via listening and through oral exercises. In contrast, there is an

⁵¹ Any type of educational material that is in the public domain or uses an open license. They are open materials since “anyone can legally and freely copy, use, adapt and re-share them.” (Kourbetis & Boukouras, 2014: 349).

“asymmetry in the feedback mechanism for regulating sign language production” (Woll & Smith, 1993, p. 240). Learners only view their hands while signing or act as observers of others’ signing. However, they do not have the whole picture of themselves signing which is an essential ability in acquiring SL (Mertzani, 2008, p. 38). Currently, SL classes are engaged with video materials to illustrate specific aspects (e.g., communicative, linguistic such as grammar and syntax), hence serving as the model of native signing to teach the target SL.

Since the middle of the 1990s, the advance of digital technology allowed the emergence of video-based bilingual dictionaries and interactive videodisc environments for deaf and hearing people. By incorporating animation, graphics, video and text, digital video enhances individual language learning – sign and spoken – in a bilingual approach. Although in the past such materials presented simple word–sign sentence drill patterns that learners repeat in a mechanistic way, current technology, in a more sophisticated fashion, involves non-linear SL info presentation, by respecting grammatical, syntactical and morphological rules of each language. Thus, there are materials that present semantic analysis of signs, showing their meanings in context (Kristoffersen & Troelsgard, 2010); SL literary ‘texts’; and grammar and syntax (Kyle, John, Mertzani & Day, 2010). In these, the video is the most essential part, since learners depend on a deaf person’s signing skills, but pertinent feedback on signing correctly is still lacking. Very few SL materials have been developed to allow, through the use of particular IT technology features, the integration of video feedback within one’s original video (Kyle et al., 2010).

The most usual material design is the one having on the one side of a window the video-signed model (frequently, a monologue by a native signer), and on the other, the corresponding written text and/or glossing of the video content. Then, each video is followed (optionally) by grammar and syntax explanations (usually in writing) that are accompanied, sometimes, by signed examples; by cultural information concerning the deaf community and/or families of deaf children; and by a target vocabulary list, in which each sign-lexical item is signed on separate, pop-out videos. For learner’s practice, usually comprehension activities ask the learners to match the text/video with the content of the target video through multiple choice and/or drag-n-drop tasks. For the development of productive skills, most materials ask (in writing) learners to repeat and sign back the content of a video. Very few digital materials have integrated IT technology that allow learners to provide their signed

answer by inserting their recorded videos in the original ones (e.g., Kyle et al., 2010; John, 2010).

When it comes to school learning, SL materials are under-researched. Although, since the 1980s, communicative approaches emerged for SL curricula construction (to mention a few for American Sign Language – ASL: Crandall & Bruhn, 1982; Ingram, 1982; Liddell, 1982), the major focus was on SL teaching in adult classes, where SL is taught as a second/foreign language. Some (e.g., the “Signing naturally” ASL curriculum) were designed for adult and children’s learning (Lentz, Mikos, & Smith, 1988; 1989). Only when SL acquisition research started mapping the developmental stages of deaf children’s SL, published work begun emerging in relation to context, methods and materials of school learning programs (e.g., Harder & Meijer, 1995; Hoshauer & Nelson, 1982). However, the area of SL material lacks research-led design and principles, especially when such materials deal with their implementation and use in school settings. In this context, this paper aims at discussing the design and certain principles that led the creation of GSL materials for the learning of GSL as the L1 of deaf children in the educational system of Greece.

Figure 1: Example of a GSL unit for the kindergarten with its sub-units, corresponding video, and suggested in-class activities. The title of the unit is “I discover myself” and that of sub-unit, “Dressing myself”. Within

this sub-unit, as it is suggested (in activity two), children fill with colourful plasticine their plastic gloves, and form the handshapes of numbers each time their teacher asks the questions/sentences glossed in blue (e.g., “who has the red glove?”, “the red gloves need to form the number 5”). The video displays the glossed phrases-models.

GSL material in primary deaf education

Overall, the GSL materials were build on a digital format with the scope to: (a) facilitate GSL learning as a school subject; and (b) support children’s individualised learning. Additionally, it was aimed to ensure equal access to materials by students, educators and family. They are based on scripted, video recordings that cover a range of topics, such as well-known stories from oral Greek tradition (e.g., various folktales and Aesop’s fables), jokes, and Greek literature (poems, novels etc.). Hence, in their majority, they are not GSL stories produced by the Greek deaf community (apart from few jokes), but literary productions of spoken Greek that are interpreted and/or transferred in GSL by native signers and/or professional interpreters.

Starting with the kindergarten title “I see and learn”, the syllabus is based on the 2004 GSL Curriculum (Kourbetis, Hoffmeister, Czubeck, & Simpsa, 2004), according to which vocabulary and grammar is taught through a cross-thematic approach. It involves twelve units, following an evolutionary structure. Thus, each unit consists of three to four sub-units, with clear objectives, recommended teaching time, description of activities, suggested GSL phrases and texts, and extra materials and tools (e.g., cards, reference tables, photographs, links, and picture stories). For example, the unit “I discover myself” involves the following three sub-units: (a) “my face”; (b) “my body and senses”; and (c) “I dress up and eat”. Figure 1 illustrates the window of sub-unit (c), including the GSL video on the right side that corresponds to each glossed, blue phrase in Greek, and two suggested classroom activities (text in Greek). Moreover, the blue text also denotes hyperlinks leading to websites and/or to other sub-units.

The exact same design and structure is followed for the titles “Look at me. I’m telling you ...”, “Language through my eyes!”, and “I learn the Signs”. The difference is on their learning objectives. For instance, the title “Look at me. I’m telling you ...” has been designed to teach GSL grammar (hand configuration, movement, signing space, negation, classifiers, etc.)

through twelve units. Emphasis is given to the teaching of the following three handshapes and their combinations: G-handshape, B-handshape and 5-handshape. Figure 2 displays one unit example where the B-handshape is taught through the singing of ten baseline phrases–referents performed in GSL by the specific handshape. The video in the figure shows the sign DONKEY in the sentence “A donkey with newspapers”, which imitates the flat form of donkey’s ears. Hence, the chosen cards comprise visual stimuli for children’s understanding of the learned grammar point, involving iconic signs at these initial learning stages. In fact, the GSL sentence structure allows the repetition of target grammar points (the B-handshape in this example), illustrating its similar articulation in the signs DONKEY and NEWSPAPER. Thus, children are called to spot and understand the difference in sign execution, and to sign back the modeled material. Similar learning principles are followed across units, where the combination of the above handshapes is taught in short stories through rhyme, rhythm and repetition. An example is presented in Figure 3, with the glossing of the story “The five giants”.

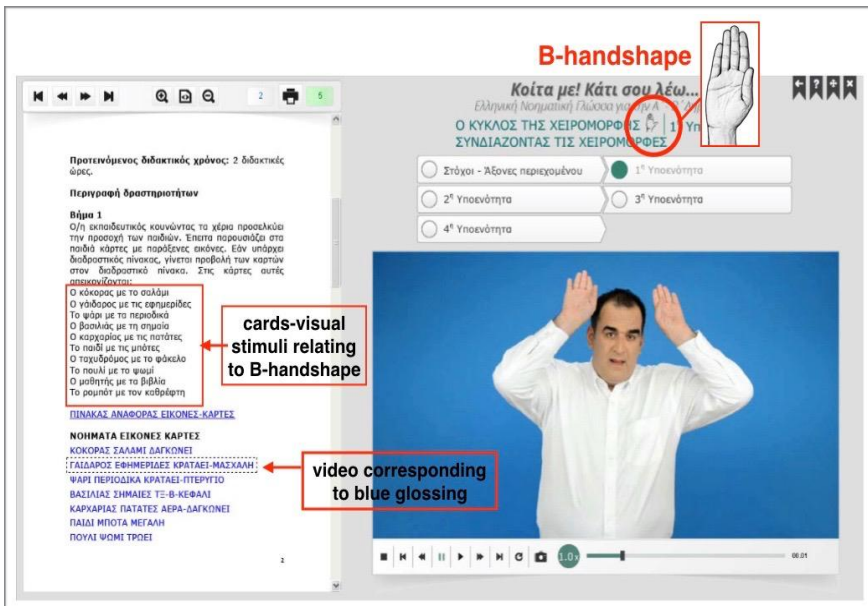


Figure 2: Example of GSL grammar unit referring to B-handshape. By clicking the blue glossing, a video appears, signing in class the sentences of the suggested activity 1. The blue glossing provides the modeled signing of each phrase.

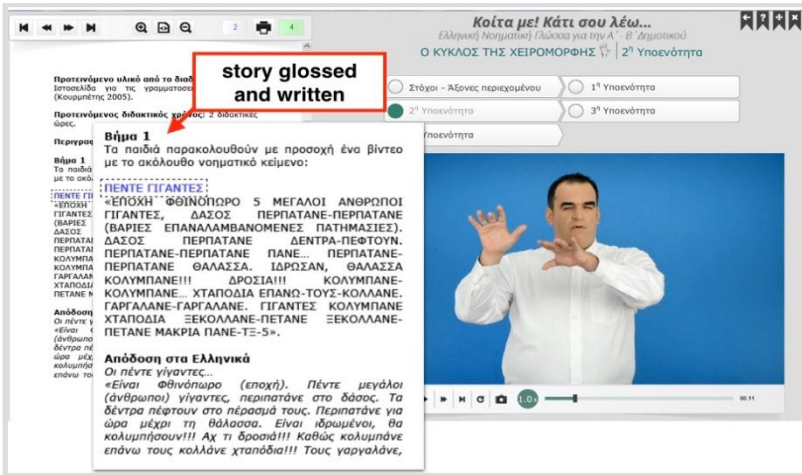


Figure 3: Example of a sub-unit for the 5-handshape learning. The task asks children to watch carefully the story “The five giants”, which is also written in Greek.



Figure 4: Activity types under the signed video, whose content is based on a poem.

In the title “Language through my eyes!”, under the signed video of each unit, there are up to six types of ‘drag and drop’ activities that engage children to respond: (i) video comprehension questions; (ii) word matching activities in which the target words must correspond to hand configurations; (iii) matching target words with corresponding images; (iv) putting words in the correct and/or alphabetic order; and (v) matching the letters (lower and upper case) (Figure 4). In (i), the comprehension question appears in a separate

rate window, under which the key answer is also provided as an option (to be clicked), should additional support is needed (Figure 5). Examples of (ii) to (v) are presented in Figure 6.

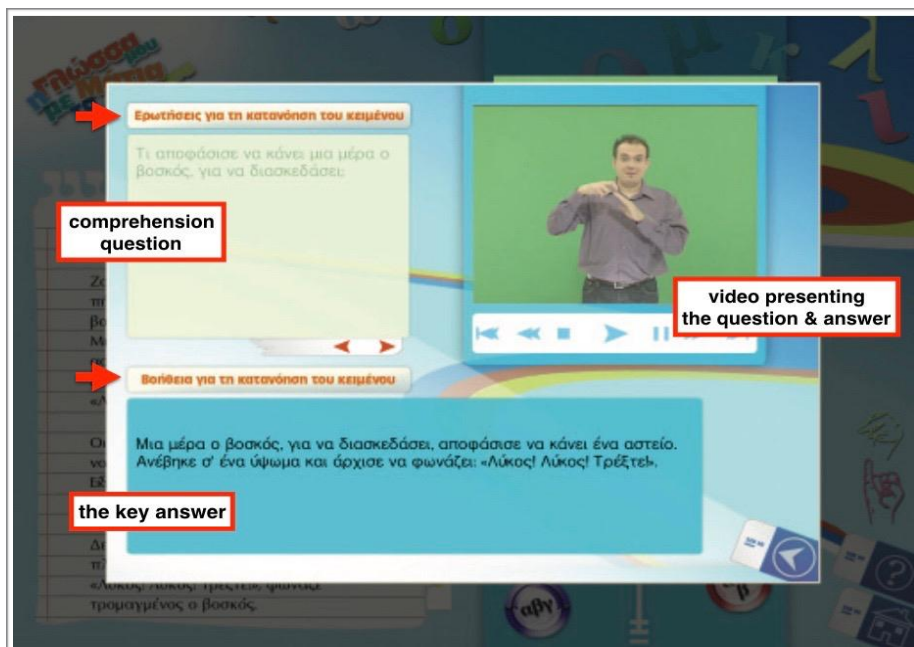


Figure 5: Comprehension question and key answer signed. Both buttons (of the comprehension question and the key) are signed and a separate video pops out when the user clicks on each. The answer is also written in Greek.

In the title “I learn the Signs” the focus is again on GSL grammar, and the material is divided in the following five units: (i) basic signs; (ii) compound signs; (iii) antonyms and synonyms; (iv) vocabulary groups; and (v) fingerspelling. The target vocabulary contained in both titles is largely based on that of the school subject “Greek language” for hearing children of the same grades in general education. Table 1 presents an example of units and sub-units following the above division (Efthimiou & Fotinea, n.d., 15-16). Contrary to previous titles, this particular does not involve any information in written Greek (apart from the contents table on the introduction window of each unit), but icons which direct graphically user’s navigation. Furthermore, each of the five units contains the following activities:(a) the matching of signs with their corresponding images; (b) matching the movement, location

or direction of a handshape presented on a video in the upper half of the window with one (among three videos) in the lower half of the window so as to complete the articulation of a sign; and (c) matching the form of handshape with its corresponding sign (Figure 7).

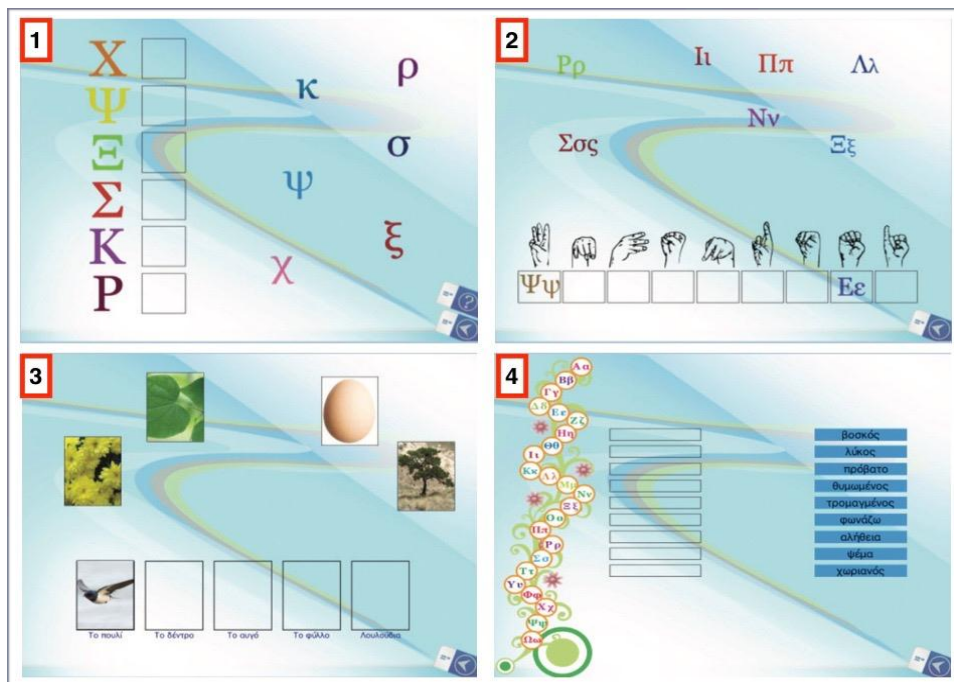


Figure 6: Examples of activity types: (1) match the letters; (2) match the letters with fingerspelling handshape; (3) match the words with the corresponding pictures; and (4) put the words in alphabetic order. They are all of a drag-n-drop format.

The GSL stories are available on an open source media platform, which enables management of large video collections, and creation of metadata and time-based annotations collaboratively. Overall, it can be used as a desktop-class web application (Kourbetis & Boukouras, 2014). The videos can be embedded by both students and teachers, since the platform offers various features such as editing subtitles; adding notes, annotations and keywords for each video; uploading documents and connecting them with each story. Additionally, for each story, the video timeline can be shown beneath the video ‘on play’, by choosing four different formats from ‘View Timelines’. From ‘View Clips’ the total number of videos appear in a timeline order (Figure 8), and from the ‘View-Show Annotations’, all subtitles syn-

chronised with each video clip of the story (Figure 9). Thus, written Greek may be used or not, depending on the learning objectives of each session. Moreover, the text reflects the current position of the video, and when teachers and/or students click on each subtitle, they can navigate the story, since each subtitle excerpt leads to another video of the same story.

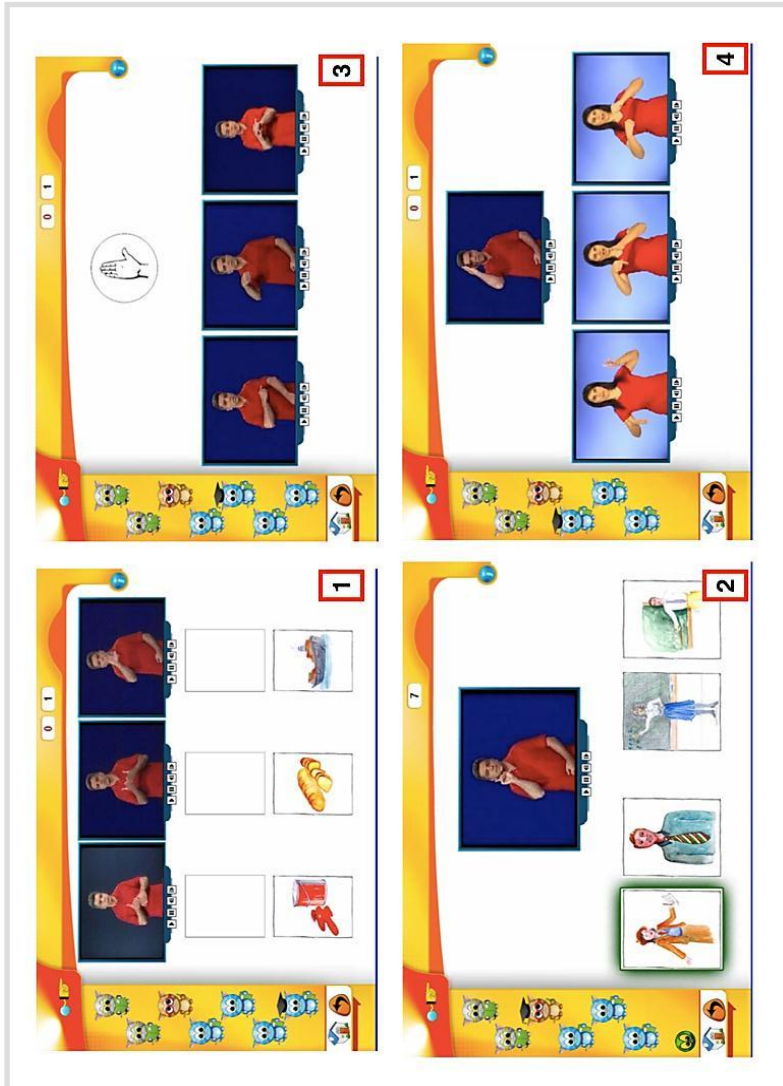








Figure 7: Activities from "I learn the Signs": (1) match the signs with the right images; (2) match the handshape with the sign; (3) match the sign with the right image; and (4) match the movement, location or direction of a handshape with the right sign.

Table 1: Example of

GSL GRAMMAR FOCUS	UNITS	LEARNING OBJECTIVE
<p>A. BASIC SIGNS</p> <p>1. Basic handshapes</p> <p>1.1 The most frequent handshapes</p> <p>1.2. One-hand sign formation</p> <p>1.3 Two-hand sign formation</p> <p>1.3.1 Use of the same handshape</p>	<p>1-5</p> <p>6-10</p> <p>11-15</p> <p>16-20</p> <p>21-23</p>	<p>To understand the basic mechanism of sign formation. To teach the 15 most frequent handshapes, which are divided in three sub-units (SUs). Each sub-unit contains 5 handshapes, starting with the most frequent to the least frequent as following:</p> <p>SU1:</p>  <p>SU2:</p>  <p>SU3:</p>  <p>To understand the mechanism of sign formation using one hand only. To teach signs formed by the following most frequent handshapes:</p>  <p>To understand the mechanism of sign formation using both hands. To teach signs formed by both hands, using the following same handshapes:</p> 

<p>1.3.2 Use of different handshapes</p>	<p>24-26</p>	<p>To teach signs formed as following: the main hand forms one of the basic handshapes, and the other hand, a different handshape. For example,</p> 
--	--------------	---

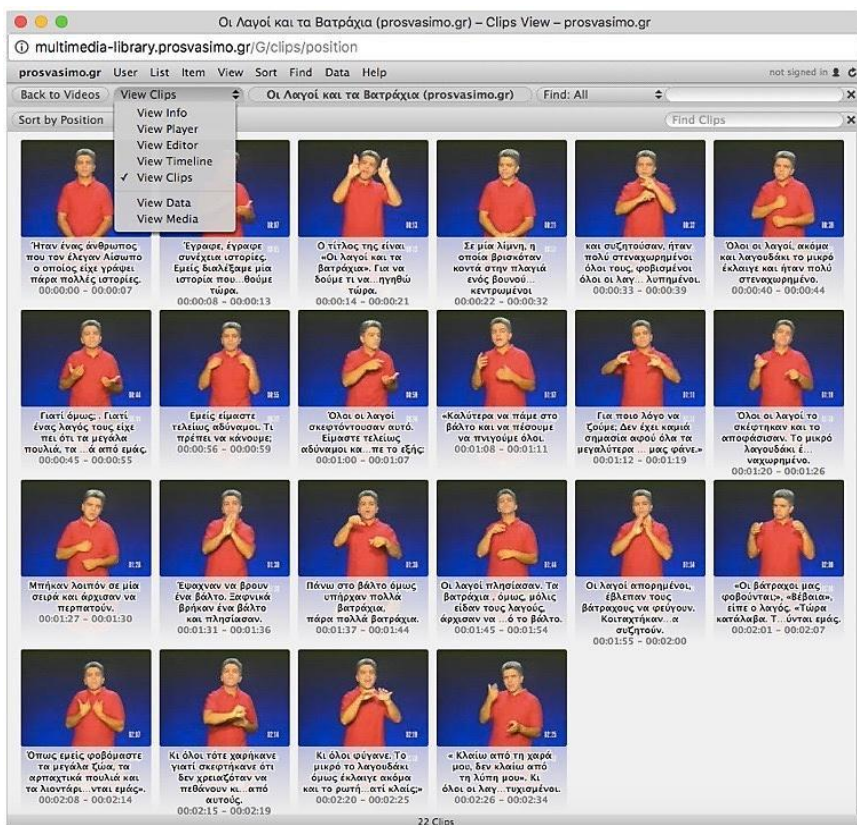


Figure 8: Example of the ‘view clips’ (among others) of a GSL story. Each video is presented in the time order of the story’s normal video view. By clicking on each video, the excerpt of the specific video appears only with its corresponding text in Greek.

Apart from the control buttons that are usually found on video clips (e.g., play, pause, fast forward), all videos support the snapshot function that allows the frames of a video to be saved and/or printed as still images (Figure 10). It also permits the adding of notes under each snapshot, hence facilitating

the elaboration of materials, especially when the latter provides opportunities for written feedback. Another characteristic is the enlarging of the videos for better viewing. Concerning the text appearing in the left side of the learning window, there are buttons referring to page forwarding, zooming, and printing.

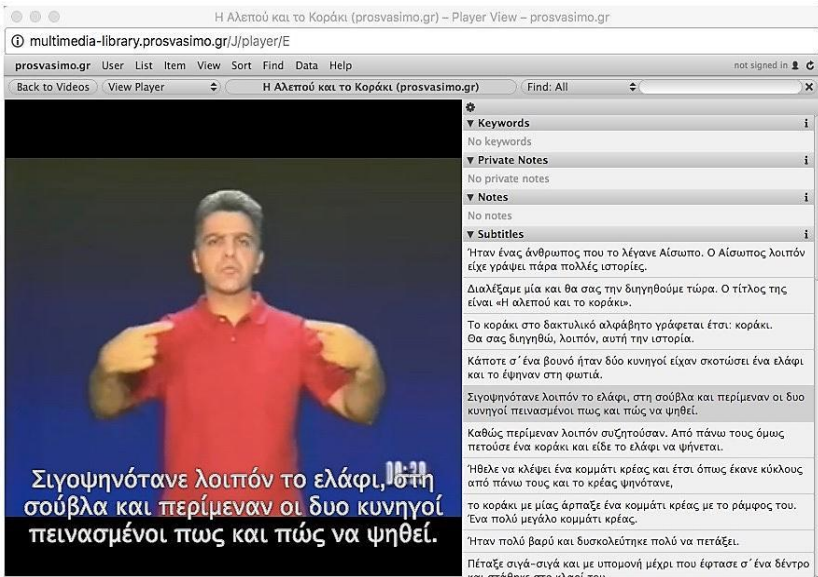


Figure 9: Example of a GSL video story with the subtitles view on the right side.

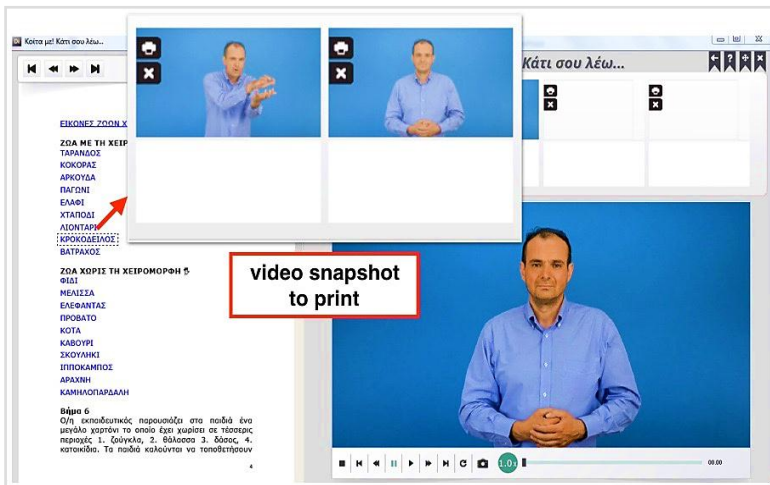


Figure 10: Video snapshot example for the sign CROCODILE.

Discussion and conclusions

This paper aimed at presenting in a practical manner some GSL materials that have been developed in the national educational system of Greece for deaf children. It offered few examples of digital design to be considered in future learning applications, following principles of sign bilingualism in the school setting. Globally, there is still the need for developing such materials, considering that SL research is relatively a recent phenomenon (about 40 years old). For sure this is the case for Greece, where GSL is a recognised language in deaf education (since 2000), but educational materials are still lacking. The advancement of sign linguistic research, especially the study of children's SL acquisition, keeps providing a better understanding of children's language competence throughout their interaction with the broader community (e.g., family, school, deaf associations) (Marschark, Schick & Spencer, 2006, p. 4). Yet, there is much delay in disseminating research results in schools, and implementing them in bilingual curricula, in which SL is taught as the first language (L1) of deaf children. This is the case for GSL curricula in primary and secondary national education. GSL linguistic research – as long is being produced and published – is slowly integrated in the curricula, a phenomenon that characterises modern Greek bilingual education since the early 1980s (Charis, 1976; Mavrogenes, 1983; Skourtou, 1995).

This section discusses the materials considering Littlejohn's (2011, p. 181) division among the 'materials-in-action' and the 'materials as they are', focusing mainly on the latter, since the former refer to the actual teaching and learning in the classroom, while using the materials. Hence, the aim is to discuss the materials themselves, their nature as a pedagogic device, focusing on aspects of their methodology, and the linguistic nature of their content. In particular the analysis sought to answer: (i) what is the learner expected to do? (ii) who with? and (iii) with what content?

With regards to the first question, the materials are constructed mainly for reinforcing children's perception skills, since the majority of tasks require to watch the videos and/or complete the drag-and-drop activities. In the early stages of SL learning the focus is on understanding the language, thus agreeing with other SL curricula such as CEFR (Common European Framework of Reference for Languages), whose basic user levels are devoted 70% to receptive skills development and the remaining 30%, to productive skills (Napier & Leeson, 2016, p. 105). Through video perception, a common task of SL materials, learners observe the model-video and/or one's self-

video (when video recording is allowed), repeat video viewing, imitate signing, and/or take notes (Mertzani, 2008; 2011). Certain tasks asked children to concentrate their attention on specific GSL forms and/or on the relationship between form and meaning. Perhaps a drawback is the fact that the suggested activities are given in written Greek and not in GSL, hence supporting educators and family members, but not children themselves, considering their pre-spelling level in Greek (in Kindergarten particularly). Regarding their productive skills, the tasks most frequently ask children to reproduce exactly certain GSL phrase patterns and/or lists of vocabulary; to memorise and recall the items, even from past units; and to combine them into their own short stories (video recordings) and/or in-class discussions.

Concerning the second question, the materials, in their majority, call children to work with their teacher and/or to perform in class (e.g., to answer to comprehension questions). This interaction is possible online, in an asynchronous way, should the platform of the online stories is used for visual feedback. In this, both teachers and students can upload their signed videos and hence create asynchronous video exchange threads. In certain titles, as in the “Look at me. I’m telling you ...”, a large portion of the suggested activities refers to the teacher only who initiates specific in-class work with the students (see Figure 1). Thus, the materials seem to promote more teacher-based interaction in the classroom.

The third part of the analysis refers to the content of materials; that is, to input to children and output from them. Emphasis has been put on vocabulary learning, by addressing the phonology of signs, focusing on the recognition of i.e. handshapes, movements and direction of signs. Less frequently they teach the grammatical position of the signs (e.g., the patterns in which the signs occur and must be used); sign collocations (e.g., the type of signs before and/or after the target sign); sign frequency and appropriateness (e.g., the communication context in which the sign is used and/or is expected to be used); and meaning associations (e.g., other signs that could be used in a given communication situation). This exposure is particularly important because deaf children are reliant on school overall to provide most of their language experience, considering that the 90% of them comes from hearing families with no signing skills. Children need to attend to modeled signing of i.e. GSL rhymes in a similar fashion as hearing children listen to songs and rhymes in the kindergarten and primary classes. This appears an old prerequisite in SL material, since the early 1990s, as Brien & Brennan (1995, p. 314) characteristically argued:

“Thus we would expect to find in these recent dictionaries signs which do not have simple one word translations into the spoken language; multi-channel signs which include non-manual as well as manual information; signs which have complex functions in the language; information on meaning which relates to the sign itself and its usage, rather than notions of the meaning based on the spoken words; signs which are made up of more than one meaningful unit, for example compound signs and polymorphic verbs.”

Up to present, internationally, very few materials offer such info, especially those created within ASL curricula (Signing Naturally, A basic course in ASL etc.) (Humphries & Padden, 2004; Lentz, Mikos, & Smith, 1988; 1989). The present GSL materials, as were the first official attempt in deaf education and a pilot one, need to consider this parameter for future developments.

They were also a first attempt to providing children access to different forms of signing and narratives, although deaf authentic language is still missing (e.g., GSL poetry, recorded theatrical excerpts, announcement messages, film excerpts). The creation of this type of materials urges the need for a close synergy among families, educators, the deaf community and authorship, which, partially, can be displayed on the platform through its embeds functions such as adding links to authentic GSL videos (on Youtube, local school servers, etc.). Children need to have the opportunity to make use of a broad variety of GSL uses, although, overall, the materials involve general articulatory or morphophonological regularities that characterise SLs internationally.

Up to present, research focuses on the early stages of SL acquisition (of infants and preschoolers), studying the lexical growth and/or the patterns of sign production in comparison to those produced by hearing coevals. Research on GSL development during the school years is under-researched, and the materials, as aforementioned, are based on adult SL learning and/or on those referring to hearing children’s learning of mother tongue and/or foreign languages. Thus, information about the GSL lexicon and grammar is still extremely limited. By 2004, when the first GSL curriculum was designed, there was no reference grammar that can be used as guidance, and as a result, on authors’ own words (Kourbetis et al., 2004, p. 6), the curriculum and current materials (since they are following the 2004 curriculum) are developed based on: the *Comprehensive American Sign Language Curriculum* by Hoffmeister, R., Greenwald, J., Czubek, T. and DiPerri, K. 2003; the *Lan-*

guage Arts Curriculum Guide of Baxter School for the Deaf; and the *Deaf Studies Curriculum Guide* of Kendal Demonstration Elementary School.

Certain linguistic features need further consideration such as SLs verb inflections (especially those requiring agreement), which involve storytelling materials, since research shows that they are acquired later, and younger children (up to four years old) prefer signing uninflected signs (Pizzuto, 2002, p. 85, 99). Hence, learning materials need to start with uninflected patterns and, progressively, to introduce the inflected ones. The fact that the GSL materials are based on concept mappings (in terms of image-signing correspondence), the relationship between conceptual mapping and certain linguistic structures needs to be examined carefully. For example, tasks should be provided for children to work out how the sets of manual (e.g., spatial verbs) and non-manual devices are integrated (Morgan & Woll, 2002, p. 259). In the present materials, some activities call for verb inflection identification and use of the structure in children's own narrative production, therefore careful consideration of such findings is demanded in GSL material design. Children must learn "verb-specific information about verb agreement in terms of which verbs require which kinds of forms" (Schick, 2006, p. 110) since their mistakes show their difficulty in figuring out the exact form (of a particular verb) in verb agreement, and do not master the classifier system (especially the handle handshapes) until the age of eight/nine years old (p. 111).

There is also the issue of 'frozen signs' (in terms of pre-scribed and didactic videos) that digital material involve and need to be validated. The materials aimed at GSL learning as children's L1, but they are not treated as monolingual ones, since both languages are involved. For example, the dictionary is based on word lists and stories of Greek texts (including glossing), and most information (as aforementioned) appears to assist teachers rather than the children. One criterion then of GSL material making for these school grades must be to match the content and visual design to the requirements of the intended users, by creating separate titles for teachers and pupils correspondingly.

A close analysis of GSL materials demonstrates the needs of the area for educators, learners, family members, and researchers involved in SL acquisition and learning. Especially the latter is necessary to be conducted in GSL classrooms and support its practice with evidence of what is the pupils expected to do with the materials, with whom, and what, so as to record what really works. This paper looked at certain features of the materials and discussed considerable insights into how both teachers and children can succeed

on GSL learning using them. It is clear from this first account that it will take more time before control over SL materials is taken and the field matures. Technology, however, is promising since it allows SL to be presented in its own terms and through its own resources.

REFERENCES

- BRIEN, D., & BRENNAN, M. (1995). Sign language dictionaries. In H. Bos, & T. Schermer (Eds.), *Sign language research 1994. Proceedings of the 4th European Congress on sign language research, Munich, September 1-3, 1994* (pp. 313-338). Hamburg: Signum.
- CHARIS, C.P. (1976). The problem of bilingualism in modern Greek education. *Comparative Education Review*, 20 (2), 216-219.
- CRANDALL, J., & BRUHN, T. (1982). Developing an effective language teaching curriculum. In F. Caccamise, M. Garretson, & U. Bellugi, *Teaching American Sign Language as a second/foreign language. Proceedings of the third national symposium on sign language research and teaching, Boston, Massachusetts, October 26-30, 1980* (pp. 72-85). Silver Spring, Maryland: National Association of the Deaf.
- EFTHIMIOU, E., & FOTINEA, E. (n.d.). *I learn the signs. Teaching environment of basic vocabulary of Greek Sign Language. Teachers' book*. (Μαθαίνω τα νοήματα. Περιβάλλον διδασκαλίας βασικού λεξιλογίου της Ελληνικής Νοηματικής Γλώσσας. Βιβλίο δασκάλου). Athens: Institute for language and speech processing/ ATHENA Research and Innovation Information Technology.
- HARDER, R., & MEIJER, E. (1995). Sign language courses for hearing parents of deaf children in the Netherlands. In H. Bos, & T. Schermer (Eds.), *Sign language research 1994. Proceedings of the 4th European Congress on sign language research, Munich, September 1-3, 1994* (pp. 273-283). Hamburg: Signum.
- HUMHRIES, T., & PADDEN, C. (2004). *Learning American Sign Language. Levels I and II, beginning & intermediate*. Boston, New York: Pearson Education Inc.
- INGRAM, R.M. (1982). Designing a curriculum for teaching American Sign Language (ASL) as a foreign/second language.
- JOHN, C. (2010). SignShared tools for sign language teaching and learning. In M. Mertzani (Ed.), *Sign language teaching and learning*, (pp. 129-134). Bristol: Centre for Deaf Studies, University of Bristol. In F. Caccamise, M. Garretson, & U. Bellugi, *Teaching American Sign Language as a second/foreign language. Proceedings of the third national symposium on sign language research and teaching, Boston, Massachusetts, October 26-30, 1980* (pp. 86-96). Silver Spring, Maryland: National Association of the Deaf.
- KYLE, J., JOHN, C., MERTZANI, M., & DAY, L. (2010). The D-Signs project: a visual environment for sign language teaching and learning. In M. Mertzani (Ed.), *Sign language teaching and learning*, (pp. 113-128). Bristol: Centre for Deaf Studies, University of Bristol.

- KOURBETIS, V., & BOUKOURAS, K. (2014). Accessible open educational resources for students with disabilities in Greece: they are open to the deaf. In C. Stephanidis, & M. Antona (Eds.), *Universal access in human-computer interaction. Universal access to information and knowledge. 8th International Conference, UAHCI 2014, held as part of HCI International 2014, Heraklion, Crete, Greece, June 22-27, 2014, Proceedings, Part II*. Volume 8514 of the series *Lecture Notes in Computer Science*, pp. 349-357.
- KOURBETIS, V., HOFFMEISTER, R., CZUBECK, T., & SIMPSA, T. (2004). *Curriculum of Greek Sign Language for compulsory education (Πρόγραμμα σπουδών Ελληνικής Νοηματικής Γλώσσας για την υποχρεωτική εκπαίδευση)*. Athens: Pedagogical Institute, Department of Special Education.
- KRISTOFFERSEN, J.H., & TROELSGARD, T. (2010). Compiling a sign language dictionary. Some of the problems faced by the sign language lexicographer. In M. Mertzani (Ed.), *Sign language teaching and learning*, (pp. 1-10). Bristol: Centre for Deaf Studies, University of Bristol.
- LENTZ, E.M., MIKOS, K., & SMITH, C. (1988). *Signing naturally. Teacher's curriculum guide, level 1*. San Diego, CA: DawnSign Press.
- LENTZ, E.M., MIKOS, K., & SMITH, C. (1989). *Signing naturally. Teacher's curriculum guide, level 2*. San Diego, CA: DawnSign Press.
- LIDDELL, S.K. (1982). Using videotaped lessons as a pre-class language learning tool. In F. Caccamise, M. Garretson, & U. Bellugi, *Teaching American Sign Language as a second/foreign language. Proceedings of the third national symposium on sign language research and teaching, Boston, Massachusetts, October 26-30, 1980* (pp. 97-106). Silver Spring, Maryland: National Association of the Deaf.
- LITTLEJOHN, A. (2011). The analysis of language teaching materials: inside the Trojan Horse. In B. Tomlinson (Ed.), *Materials development in language teaching* (second edition), (pp. 179 - 211). Cambridge: Cambridge University Press.
- MARSCHARK, M., SCHICK, B., & SPENCER, P.E. (2006). Understanding sign language development of deaf children. In B. Schick, M. Marschark, P.E. Spencer (Eds.), *Advances in the sign language development of deaf children* (pp. 3-19). Oxford: Oxford University Press.
- MAVROGENES, N. (1983). Cultural effects on teaching reading in modern Greece. *Journal of Reading*, 26 (7), pp. 622-628.
- MERTZANI, M. (2008). Video-based computer mediated communication for sign language learning. Ph.D. Thesis, Centre for Deaf Studies, University of Bristol, Bristol - U.K.
- MERTZANI, M. (2011). Computer-assisted learning in British Sign Language. *Sign Language Studies*, 12 (1), 119-154.
- MORGAN, G., & WOLL, B. (2002). The development of complex sentences in British Sign Language. In G. Morgan & B. Woll (Eds.), *Directions in sign language acquisition* (pp. 255 - 275). Amsterdam/Philadelphia: John Benjamins.
- NAPIER, J., & LEESON, L. (2016). *Sign language in action*. Hampshire, U.K.: Palgrave Macmillan.
- PIZZUTO, E. (2002). The development of Italian Sign Language (LIS) in deaf preschoolers. In G. Morgan & B. Woll (Eds.), *Directions in sign language acquisition* (pp. 77 - 114). Amsterdam/Philadelphia: John Benjamins.

SCHICK, B. (2006). Acquiring a visually motivated language: evidence from diverse learners. In B. Schick, M. Marschark, P.E. Spencer (Eds.), *Advances in the sign language development of deaf children* (pp. 102-134). Oxford: Oxford University Press.

SKOURTOU, E. (1995) Some notes about the relationship between bilingualism and literacy concerning the teaching of Greek as a second language. *European Journal of Intercultural studies*, 6 (2), 24-30.

WOLL, B., & SMITH, P. (1993). A multi-media system for the teaching of sign language. In B.A.G. Elsendoorn & F. Coninx (Eds.), *Interactive learning technology for the deaf* (pp. 239-248). Berlin: Springer-Verlag.

