



## Content

Content.....	1
President's Message.....	2
IPRS Report .....	3
Some Thoughts About the Istanbul Council Meeting.....	4
Tribute to Ihsan Yener.....	9
Scientific Committee report .....	10
TIRO – A New Journal on Professional Reporting and Transcription.....	12
From The Jury Desk .....	13
Observers at the 12 <sup>th</sup> triennial CHEA conference.....	14
Italian Stenographers Roll Out the Red Carpet at Rome’s Palazzo Madama .....	16
50 Jahre Wiener Urkunde.....	18
50 Years of Vienna Certificate: this is worth a special event!	18
A whole weekend dedicated to shorthand!	18
International Conference in Vienna .....	19
A Mediterranean breeze through the Dutch Parliamentary Reporting Office.....	24
News from Argentina .....	26
The day Walt Disney visited stenographers in Argentina .....	34
Digital signature in the senate journal of the debates in Argentina.....	34
Visiting days and training courses .....	35
Stenographers and stenotipistes of the senate and the library of the congress in the night of the museums .....	36
Parliamentary’s stenographer day .....	37
The end of “drawn words” 5 <sup>th</sup> season, the radio program about stenography .....	38
Digital “Tachygraphy” .....	39
The Betty Willett award .....	42
Modern marries ancient.....	44

## President's Message

Hello, Intersteno Friends!

Our **e-news** is full of reading material to keep you engaged for quite a while, so in an effort to save your sight for this interesting edition, I will keep my message brief.

The Intersteno Council and IPRS meetings in Istanbul were a great success and once again, thank you to our warm hosts, our Turkish friends. Reports and photos are in this **e-news**.

Time goes so quickly, doesn't it, and we are only seven months away from our congress in Cagliari. For this congress, IPRS offers a tour of the senate in Rome, as well as the town hall in Cagliari. Be sure to check the website (<http://www.intersteno2019.org/>) as congress details are updated regularly. If your housing arrangements are not made, this would be a good time to research for your stay. And if you have a presentation subject for the general session or IPRS meetings, be sure to send your proposal to a member of the Scientific Committee and/or IPRS Steering Committee.

The Intersteno board will meet in The Hague next year, February 8 and 9. I, along with my colleagues, look forward to welcoming the board members to our beautiful municipality.

As this holiday season sets into full swing, I want to take this opportunity to wish you all the very best of health, happiness and success in the New Year. Your support of Intersteno and its mission has been immense and does not go unrecognized.

On behalf of Intersteno ... *Happy Holidays!*

With fond regards,

**Rian Schwarz van Poppel**  
**INTERSTENO president**



## IPRS Report

By Marlene Rijkse

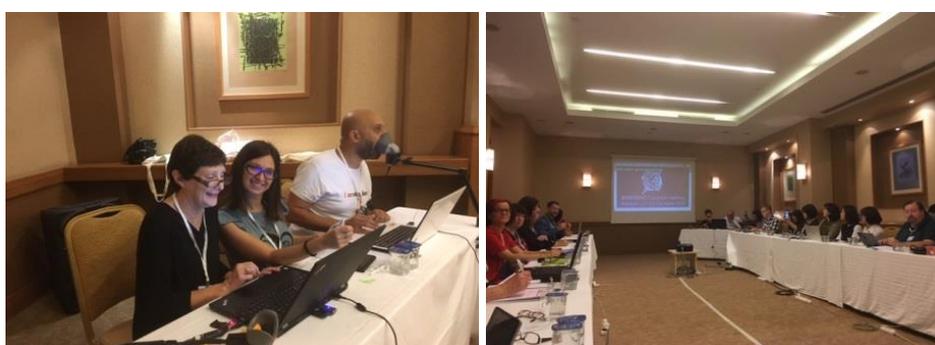
[Intersteno, Council & IPRS Meetings Istanbul, October 10-13, 2018](#)

The participants look back on a warm reception by the Turkish group and at good meetings, both from the Council and from the IPRS. In addition, the program also offered a good look at the beautiful city of Istanbul.

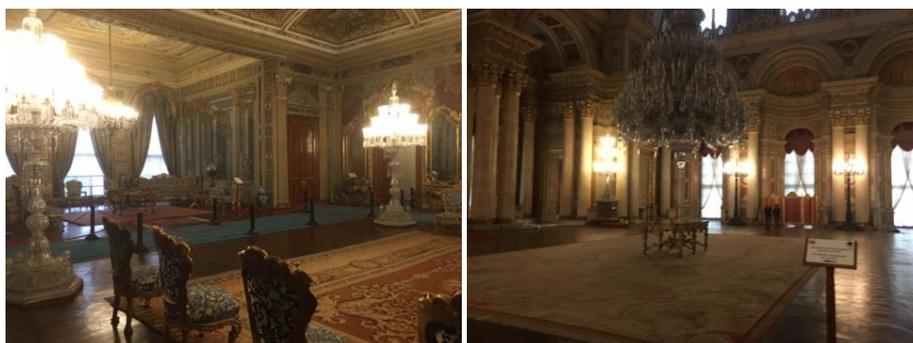
On Wednesday 10 October all guests were welcomed with a welcome dinner at the Holiday Inn Sisly hotel, a pleasant location with good meeting facilities.

The next day started with a long Council meeting. During this meeting we looked, alongside many other topics, back at the congress in Berlin in 2017 and we looked forward to the congress in Cagliari in 2019. Much time was spent discussing proposals for the competitions.

The Council meetings were, for the first time, subtitled by Linda Drake, Carlo Eugeni and Francesca Marchionne.



During the IPRS meeting in the afternoon information was provided about the training methods (Emrah Kuyumcu) and the learning methods (Ezgi Aktürk) of the F Keyboard. Finally, there was a video presentation about the reporting of the International Criminal Court by Jenny Costales.



After the meeting a visit was made to the Dolmabahçe Palace, built in 1856. The palace covers an area of 45,000 m<sup>2</sup> and consists of 285 rooms, 46 rooms, 6 bathrooms and 68 toilets. At the picture you see the largest chandelier in the world, which was donated by Queen Victoria. The palace was inhabited by Atatürk during his last years of life until his death. His room is now part of the museum.

The afternoon ended with a bus tour through Istanbul, with a stop at the Blue Mosque.



The next day the meeting of the Council started at 09.00. The meeting was interrupted for the second IPRS meeting, where a presentation was given on the developments in the field of automatic speech recognition in the Dutch parliament (Henk-Jan Eras and Deru Schelhaas) and on developments in the report service of the National Assembly of the Turkish parliament (Ayşe Yedekçi).

That evening was the farewell dinner, with great food and live music.



On Saturday was the Bosphorus Tour. From the water we got a good view of Istanbul and its surroundings.



Many thanks to the Turkish country group for their efforts to make this program possible.

## Some Thoughts About the Istanbul Council Meeting

By Anita Dobos

In the middle of October we arrived from 16 countries (Argentina, Belgium, Brazil, Czech Republic, Finland, France, Germany, Hungary, Italy, Poland, South Korea, Switzerland, The Netherlands, Turkey, United Kingdom and USA) to Istanbul.

Unfortunately Bernadett Berencsi (or as most of us know, Detti) from Hungary couldn't take part, so my responsibility was huge because I wanted to do the best. There was a Hungarian colleague, who had said: it's much easier for two people to achieve goals (it happened before Zagreb Council Meeting where I took part with another Hungarian colleague, with mentioned colleague's almost full support). At the same time in this year in Istanbul I had to work alone. I did of course everything what I could but it would have been much easier and better to work together with my Hungarian colleague in Istanbul as we did in the previous meeting in Zagreb. I'm very grateful to Detti for her support and her advices before my work in Istanbul!

I'm sure that several reports were posted (or will be posted), so I would like to write just a short article from my point of view about Istanbul meeting.

First of all I'm very grateful to our amazing Intersteno president, Rian Schwarz-van Poppel, our secretary treasurer, Danny Devriendt and our Board member, Emrah Kuyumcu, who were very understanding and patient, when my participation was 'in danger'!

Thank you for Emrah Kuyumcu, Ezgi Aktürk, Helena Zaviačičová and Krystian Wawrzynek! They helped me effectively when I needed it!

Of course I'm most thankful to the Turkish group for for the huge work, perfect organising and for their hospitality and kindness! Let me mention everyone in this great team: Seçkin Köse, Sevilay Gündoğdu, Saynur Kiliçaslan, Emrah Kuyumcu, Ümit Serbest, Ezgi Aktürk, Hatice Mesci, Meral Yener, Nurben Dönmez, Erhan Durmuş, Mustafa Kartopu, Osman Güderen. Thank you very much to all of you! You made these days in your wonderful city truly memorable for us!

Thank you for all Intersteno colleagues and friends for their support in the jury and/or in the council (even if we didn't always agree with each other)! Special thanks to Uda Kuhn, Waltraut Dierks and Georgette Sante! Thanks for Francesca Marchionne for useful advices regarding flight tickets and accomodation in Cagliari!

I'm very grateful for all the good people and good friends, making a family atmosphere during these days and for the tolerance, harmony, friendship and helping each other!

Last, but not least I'm grateful to everyone in Hungary whom (from the first minute to the last!) supported and helped me!



*Dolmabahce Palace's room*



*Bosphorus with Dolmabahçe Palace*



*Thank you for Waltraut Dierks's jury work*



*Presentation in the council about Cagliari*



*New Intersteno generation in front of Blue mosque*



*Jury meeting*



*Great organization committee*

In addition to the meetings the participants took part in several events and we got to know this beautiful city. We had a very rich program, just to name a few: city tour in Istanbul, visiting Dolmabahçe Palace with the beautiful rooms and its park and Bosphorus tour was unforgettable!

I hope, the next 130 years will be as successful as the first more than 130 years for our Intersteno!

Hopefully we can meet all colleagues and friends in Cagliari at the 52<sup>nd</sup> Intersteno congress (or maybe even sooner than that who knows...☺)!

# Tribute to Ihsan Yener

By Georgette Sante

Sunday morning, October 13, 2018 ... end of the Intersteno Council meeting.

The day before, most of participants went in a trip on the Bosphorus: all Intersteno-meetings traditionally end with a relax-moment. In the lobby we hear "See you soon", "Welcome back home"... most of the Intersteno members are checking out, some have already gone, without breakfast. The sadness of farewell is softened by the prospect to meet again, six months later, in Cagliari.

Others are more relaxed: they'll leave only at night, or even on Monday. A last mission awaits them: it was not written in the official program and, I'm sure, all would have appreciated to participate if their plane could wait for them.

There, at the top of a wooded hill, in the peaceful Ayazağa cemetery, among birdsongs, far from the Istanbul bustle, they gathered in around Ihsan Yener's tomb to pay him a last tribute in the company of his daughter Meral Yener.





*Seçkin Köse, Emrah Kuyumcu, Saynur Kiliçaslan, Nurben Dönmez, Sevilay Gündoğdu, Mustafa Kartopu, Osman Güderen  
Jacqueline Bertin-Mahieux, Anita Dobos, Francesca Marchione, Russel Page, Allen Rotz, Krystian Wawrzynek,  
Georgette Sante*

## Scientific Committee report

By Dr. Carlo Eugeni

Dear Intersteno friends, 10 October 2018 is one of those dates that marked an important milestone in the life of the Scientific Committee because we met for the very first time outside the Congress. It was not the biggest event of the Federation, rather it was quite marginal, but I think it is evidence of how active and lively Intersteno is apart from the world championship, which makes me particularly proud of us all. In Istanbul we were not many, but we had an exciting meeting where we discussed about the advances in the several interesting projects we are already carrying out and about new projects:



Reporting project: started in Berlin, it is a project that Eero Voutilainen (Finland) is acting with the support and contribution of other Intersteno members. This project entails a comparative study on the linguistic and editorial principles of parliamentary reporting in as many parliaments of the world possible. The aim is to collect data from the reporting offices of the world, to understand what is meant by Parliamentary Report in the different countries, and possibly to bring the results to a higher level. In January you will receive an email from this very active Intersteno member, asking for an invaluable favour: parliamentary reporters will be asked to fill in a questionnaire about linguistic strategies in your profession, while the others will be asked to spread the questionnaire to the parliamentary reporters they know. The results of the survey are to be presented in the Intersteno Congress in Cagliari, on 16 July 2019, by Eero and Henk-Jan (the Netherlands).



Language comparison: This project is the result of complaints made to the Jury from different countries. It is a project that was first presented at the Scientific Committee meeting in Budapest and re-presented in Berlin by Jean-Charles Le Masson (France) and lies on a different way to think the way Intersteno compares languages in the championships. The aim is to provide a fairer and more comprehensible system as compared to the current one, which poses both technical and political problems. The general idea is to use a universal standard, the International Phonetic Alphabet (IPA), to compare all competing languages in those competitions which imply a voice recording to be transcribed. I have asked my students to work on this project and we have already made one step: collecting corpora of written texts in 20 languages. The next step is to transcribe these corpora in IPA. This is not going to be an easy task because the open-source software programs available are extremely low and limited in the number of languages. I am confident that in Cagliari it will be possible to present some first results to understand how the preparation of the competition texts and the results would change with the new system.

ISA (Intersteno Shorthand Archive): Thanks to Boris Neubauer (Germany), who coordinates the project, the Deutsche Digital Bibliothek is willing to share its stenobooks with ISA. A big contribution is also coming from another coordinator of the project, Jorge Bravo (Argentina), who contributes to the ISA project with his library. Moreover, he is regularly in contact with the Biblioteca Pública Municipal in Madrid in order to let them join the project. Together with the language comparison project, this is another move that may be diplomatically useful to Intersteno to have some countries back to the Federation.

6th International Symposium on Live Subtitling: held in Milan on 14 September 2018 at the Civica Scuola per Traduttori e Interpreti "Altiero Spinelli"; co-sponsored by onA.I.R. – Intersteno Italia, Intersteno, and the Italian software house PerVoice; attended by some Intersteno people like Minori Arai (Canada), Jennifer Schuck (USA), and Alberto Trivulzio and Francesca Marchionne (Italy); organised by me, Henk-Jan Eras, and other non-Intersteno people, the Symposium gathered scholars and professionals around the topic of live production of texts in several contexts (conference subtitling, parliamentary reporting, and TV captioning). We were able to make progress in one field the IPRS is also involved in, meaning the possibility to bridge the gap between the professional world and academia worldwide in our field. The Symposium was also the occasion of the kick-off of a EU-funded project, the LTA project, Intersteno champion Wim Gerbecks (Text-on-Top) and I are involved in (<https://lta-project.eu>). The Symposium also received the High Patronage of the European Parliament and its vice-President Fabio Massimo Castaldo sent a very passionate message, witnessing the interest of the Parliament to commit in this field (<http://www.respeaking.net/Milan2018.html>).



Intersteno journal: the scientific committee has agreed on committing in an on-line journal dealing with the many topics covered by the Intersteno (for more info see Eero's article below).

Wikipedia article: being one of the oldest international organizations in the world, we have agreed that Intersteno deserves an article on Wikipedia. For this reason, Allen Rotz (USA), expert in Plain Language, and Ezgi Aktürk (Turkey), candidate to the Scientific Committee, will team to write an article about Intersteno to upload to Wikipedia. Once the article is ready and uploaded, Intersteno people will be asked to help translating it. Together with the Intersteno anthem and the journal, we believe that this project will help reinforce our identity as a family as the beloved İhsan Yener liked to call us.

# TIRO – A New Journal on Professional Reporting and Transcription

By Eero Voutilainen

For 131 years, Intersteno has been the key international forum for professionals in speech-to-text reporting and transcription. Since 1887, skilled practitioners of stenography and other types of speech capturing have gathered regularly from all over the world to exchange new ideas and best practices in how to capture, preserve and present spoken communication in written form. This network has been essential in maintaining, spreading and developing reporting and transcription as professions.

While capturing and preserving the words of others, the Intersteno community has not been as active in preserving its own discussions for the future. Many inspiring presentations and ideas in Intersteno conferences, meetings and other occasions have not been published in writing. On the other hand, articles concerning professional reporting and transcription have been published sporadically in many different forums and may sometimes be hard to find.

To address this problem, Intersteno Scientific Committee is establishing a new web-based journal: *Tiro – The Journal of Professional Reporting and Transcription*. Named after Marcus Tullius Tiro (supposedly 103-4 B.C.E.), an early stenographer who transcribed the celebrated speeches of Cicero for future generations, *Tiro* will publish professional articles about all forms of speech capturing. The articles will range from traditional techniques, such as shorthand and stenography, to modern technologies like automatic speech recognition and respeaking. *Tiro* will publish articles that concern all types of reporting and transcription professions, such as parliamentary reporting, court reporting, forensic transcription, speech-to-text interpreting, dictation and note taking, and transcription for academic purposes.

*Tiro's* main purpose is to spread out valuable ideas and practices within the field of professional reporting and transcription. It will provide a forum where professionals may share and compare their views about current topics in the field. The articles aim to be clear and compact, and they may discuss a variety of topics, such as the history of shorthand, pedagogical techniques for training typists or an important principle or a practical detail in modern verbatim reports. *Tiro* is open for anyone who wants to share his or her perspective to reporting or transcription. On the other hand, it acts as a natural platform for the members of Intersteno to publish short articles based on, for example, the presentations that they have given in Intersteno general conferences and IPRS meetings. There will be one or more issues per year, depending on the number of articles to be published.

*Tiro* has already started its work this October within the Scientific Committee, planning the work processes and the practical details of publication. If you would also like to be involved with the making of the journal, please do not hesitate to be in touch! For example, people who are experienced with journal or magazine layout, graphic design or web page management are especially needed. I also welcome everybody to offer texts and ideas for the first issue! The first issue will appear next year after the Cagliari congress.

Eero Voutilainen, Editor-in-chief

e-mail: eero.voutilainen[at]eduskunta.fi

## From The Jury Desk

By Georgette Sante

During the Council meeting in Istanbul, begin of October 2018, the following points have been agreed upon:

- the multilingual speech capturing will not be organised;
- for the Note Taking and Summary reporting competition, transcription time has been increased to 90 minutes;
- dictations for Speech Capturing (SC), Real Time (RT) and Note Taking (NT) competitions will be organized simultaneously for up to eight languages in one room with infrared system:
- to listen to the dictation, each competitor needs to bring a wired headset;
- the headset will be connected, via a standard 3,5 mm jack, to an infrared receiver provided by the jury in exchange for the ID-card as caution;
- the competitor will have to choose the correct language channel and to set the volume;
- a technical test will be organized before the competitions;
- instructions similar as used for PC-contests, will be projected, indicating what competitors need to do.



Detailed information is available on the congress website [www.intersteno2019.org](http://www.intersteno2019.org).



## Observers at the 12<sup>th</sup> triennial CHEA conference

By Giulia Torregrossa

The Commonwealth Hansard Editors Association, founded in Westminster in 1984, allows parliamentary reporters from all around the world to share skills and experience in reporting techniques and methodologies. CHEA also has regional branches, such as the BIPRA (British-Irish Parliamentary Reporting Association) or the APHEA (Australasian and Pacific Hansard Editors Associations) .



Belonging to the Commonwealth, a community of "brothers and sisters who help each other" benefiting from the linguistic community - as they like to define themselves - provides the enormous advantage of sharing technological best practices, according to the principle of the life-long learning, and of exporting them to the emerging democracies that are part of it (like the Canadian Senate with Trinidad and Tobago and the Australian parliaments with the Pacific States, like Victoria with Fiji ).

From 22nd to 27th July 2018, the 12th triennial conference of the CHEA took place in London. It was entitled «Bridging the gap» and was focused on the public interest in politics and parliamentary activity in general, and therefore the parliamentary reports.

Delegates from several countries were present: Australia (New South Wales, Tasmania, Victoria and Western Australia); Barbados; Canada (Alberta, British Columbia, Quebec and Yukon); Ghana; Guyana; Ireland; Kenya; Malawi; New Zealand; Sierra Leone; Sri Lanka; South Africa; Swaziland; Trinidad and Tobago; Uganda; of course, the United Kingdom, with both the Houses of Parliament and various local parliaments (Northern Ireland, Scotland, Wales and Guernsey); the Isle of Man and Zambia.

There were also three delegates as observers, i.e. non-Commonwealth stakeholders: one from the Hong Kong Legislative Council (a country that came out of the Commonwealth) and two from Europe (the German Bundestag and the Italian Senate, the latter present for the first time ).

It was a wonderful surprise for me to find Bärbel Heising, the German colleague whom I had already met during the 2015 Budapest Intersteno Congress, and I immediately felt at home. We spent a lot of time together during the week of the conference, sharing our enthusiasm for a wonderful professional opportunity and the passion for our work, which made us feel on the same wavelength, and we started to design interesting projects together. Sometimes it was not easy to understand the various accents for those who were not native speakers, like us, but the inaugural speech by the president of the CHEA John Vice, from the House of Lords, who started his welcome speech calling us «brothers and sisters», created soon a relaxed atmosphere, which encouraged the maximum learning and receptivity by all (and this was the purpose of the event).

The conference was preceded by the welcome of the Presidents and the Hansard directors of both Houses of Parliament and of the Clerk assistant of the House of Lords and by a guided tour to Westminster Palace, held by some employees on a voluntary basis (a praiseworthy example of attachment to the institutions and to the history of their own Country). On request, it was also possible to attend part of a sitting of the House of Lords (a Parliament is always a Parliament, but how many different nuances exist from Country to Country!).

The organization of the event was immaculately designed, from every point of view: the distribution of presentations and moments of pause favored the possibility of collecting ideas after having stored much information and exchanging questions in an informal way to deepen some topics. It is simpler to face to face with individual delegates, in front of a coffee, after an intense moment of concentration, and I have pleasantly found a lot of interest towards us, the observers, because many of the delegates already knew each other and therefore were curious to know our news. One of the approaches to sharing the

knowledge that most impressed me was the organization of work in small groups of discussion or even in pairs. Even the moments of informal networking were strategic for mutual acquaintance, such as the formal dinner in the House of Lords Cholmondeley Room and Terrace (I could sit next to the Clerk Assistan of the House of Lords, Mr Simon Burton, who gave me great pride by referring to me the excellent reports between the high Chambers of our Countries!) and the final relaxing boat trip to Greenwich.

Among the presentations, there has been talk of analysis of web data relating to the interest for reports by the public, which now accesses them mainly through personal mobile devices (with consequent dematerialization of paper documents and digitization of the reports archive since 1803). The new frontier of reporting is represented by the forced alignment (side by side written report and video recording) and by the logging-in, which is carried out by the reporters present in the plenary (input of various related data, like procedural steps, speakers' names, applause or physiology, to facilitate reporting).

The next goal after the forced alignment will be the reverse path: clicking on the report and going to the corresponding portion of video. This way, only those who so wish could elaborate on some contents that are not relevant to the pre-eminently legislative activity (which, precisely as such, in some cases are omitted in the report). I refer in particular to non-verbal activities that in the reports of some Parliaments - France, Italy or Spain - are detailed in physiology, but that in others - as in the UK - are generically referred to as «Interruptions», starting from the premise that first users of the reports are MPs, who were present and know the incident (but also because of the more orderly development of the work, due to a cultural attitude). Where instead the report is conceived as an instrument to inform the reader, who may not have seen the video of the session, they tend to give detailed information on the facts that occur inside the plenary, so that no discrepancies are found in comparison with the press or mass media (images) circulate quickly!) and any comments - or legal actions - that could be dragged into subsequent sessions become so understandable.

The consequences of the forced alignment have been then analyzed on the level of editing that the texts may undergo - less profound than in the past, because of the direct comparison between the two products - but also on the enhancement of the delicate work of reporting. The interpenetration of the products has given new vitality to the report, in spite of those who had predicted its decline with the advent of video broadcasts (these products have different audiences).



Just to give an example, the presentation which reported the results of the partnership between the Isle of Man, Sierra Leone and Ghana was very interesting: the reports offices of the respective Parliaments collaborated for the diffusion of new technologies and new ways of reporting and of dissemination of the report, between parliamentarians and with the public.

In Uganda and South Africa, where digitization is not widespread, in order to bring people closer to the Parliaments, they organize weeks dedicated to specific categories (Parliament of students, women, workers ...), during which people can access, know MPs, their work and debate with them (with a final report). A great way to "bridging the gap" (and we all always have something to learn from each other).

Then they talked about close captioning and subtitling, the centenary of female suffrage in the United Kingdom and of Mrs Jeane Winder, the first British parliamentary reporter, who, in the 40s of the last century, had to conduct a ten-year battle to receive an equal pay to that of male colleagues, as well as dark web and a prudent management of personal data .

At the end of the conference, our feedback was requested. In my opinion, the informal approach has fertilized the ground for a fruitful exchange of ideas, overshadowing the differences between the participants as regards their status (delegates or observers) or role (residentists, auditors, directors).

And then, unfortunately, it was time to go back home. It's always a sad thing to leave London, the magnificent city that, every time you visit it, offers new opportunities for all tastes. I brought back home with me a feeling of profound gratitude towards the warm welcome I found, the kind attention towards me, the kindness of everyone and the many smiles and looks I met, of all colors . New wonderful friendships were born, like with Mrs. Tamus Hon from Hong-Kong and Mrs. FoongLing Kong from Victoria (Australia), and old ones were strengthened, like with Mr. D'Arcy McPherson from Canada.

But the work has just begun for the delegates, not only because some of them have already started planning the next conference, but also because everyone is now thinking of how to develop in a concrete and practical way all the information we received. Those of you who have not received my notorious questionnaire on the production of parliamentary reports yet, get ready !

<sup>1</sup> On this topic a couple of years ago the Senate organized an online training course for all employees.

<sup>1</sup> A special thanks goes to the indefatigable Caroline Rowlands, the secretary of CHEA, who always had a solution for every need and to Katie Andrews, who, until the last day, pretended not to speak Italian, just to make me practice!

<sup>1</sup> In the collage, starting from the photo at the top left, to the right, there are, together with me, Mrs. Bärbel Hausing (German Bundestag); Miss Katie Andrews (House of Lords, UK); Mrs. Lila Rodriguez-Roberts (Trinidad & Tobago) and Mr. John Vice (House of Lords, UK); Mr. D'Arcy McPherson (Canadian Senate), Mrs. Tamus Hon (Legislative Council of Hong Kong) and Mrs. Karen Turner (New South Wales, Australia).

## Italian Stenographers Roll Out the Red Carpet at Rome's Palazzo Madama

By Laura Brewer

It started when I opened my E-News 86 for September 2018. There were two articles about reporters visiting the Senate in Rome – an American reporter and an Argentinian reporter. Giulia Torregrossa, who had hosted both visits, wrote the articles.

Giulia's articles sparked an idea. We were headed to Rome in a few short weeks for a professional conference that my husband would be attending. My good friend and colleague Jennifer Schuck (2017 Intersteno Speech Capturing Champion) had just been to the Intersteno meeting in Milan, and I knew she had met Giulia. At my request, Jen put me in touch with Giulia, and – a vela! – we were invited to tour the Senato della Repubblica, the Italian Senate, in October.

Giulia graciously arranged for my husband, Peter, and me to have a guided tour in English of the Senate in the lovely Palazzo Madama, adjacent to the Piazza Navona and just steps from the Pantheon, after which we would meet with Giulia and some of her colleagues.

Our tour was to be Monday morning, October 15, at 10am, and we were instructed to arrive at via degli Staderari, 4, ten or five minutes in advance, to bring our documents (passports), and to be sure to dress appropriately – jacket and tie for men and smart attire for women.

Not wanting to risk being late the day of our visit, Peter and I went exploring several days prior to our appointed visit to be sure we knew exactly where via degli Staderari, 4, was located. Palazzo Madama, a short ten-minute walk from our hotel, was easy to locate, but we could not find degli Staderari, 4. We approached the guard station outside the Palazzo Madama to ask for directions, and we were directed to a tall fence with a gate that had no identifying number. After making inquiries of several people, we explored other entrances with no luck. We concluded that we would be able to find the correct entrance on Monday morning.

Monday arrived, and we arrived early – properly attired, passports in hand. We found the correct entrance easily, and after the formalities of checking in and getting our badges, we were warmly greeted by Giulia, who treated us to coffee and introduced us to Paolo Antonio Michela Zucco, whose ancestor invented the Michela writer that Giulia and others use to report the proceedings of the Italian Senate. Our guide was ready for us at 10 a.m., and, accompanied by Giulia and another Senate reporter, we toured the beautiful Palazzo Madama and other connected buildings that together form the home of the Italian Senate. We were able to visit committee rooms, to learn about the Italian governmental process, and to see how the Italian Senate conducts business and makes law.

When we entered the main chamber, I was delighted to see the workspace for the Senate reporters on the main floor directly in front of the chair's dais. Michela writers were set up at the work stations, and Giulia and one of her colleagues were able to eloquently answer questions of another visitor on our tour who asked why stenographers are still used to report the proceedings of the Senate. Giulia's explanation was



interesting and thorough as she described the process of creating a final transcript for delivery within an astonishing 30 to 40 minutes of the proceedings. Even as an experienced court reporter and CART captioner accustomed to fielding similar questions, I was impressed by Giulia's ready and clear explanation of the advantages of live stenographers. I know from my years of experience how demanding this job is and the high level of skill necessary to accurately report the spoken word, but I am not always so adept at articulating why this is the case when this same question is asked of me. I found Giulia's response clear and persuasive.

One of the more memorable rooms was the Sala Maccari, with its paintings by Cesare Maccari depicting ancient Roman Senators in scenes that demonstrate their most highly prized virtues: bravery, persuasion, honesty, and intelligence.

After the tour, Giulia took us back to her office where we could see her workspace. We were introduced to the head of the Italian Senate reporting office, Dr. Massimo Martinelli, who graciously received us in his office.

Many thanks to Giulia for taking time out of her schedule to meet us and show us the spectacular Palazzo Madama, home of the Italian Senate. As we were leaving, Giulia gave us beautiful souvenir portfolios and picture books of the Senate as well as a very well-written article about the Michela method of stenography.

Grazie mille, Giulia, for your warmth and generosity in hosting us!

I know that the participants in the next Intersteno Congress will have a wonderful time touring the Italian Senate before the July congress in Cagliari.

# 50 Jahre Wiener Urkunde

By Georgette Sante

## 50 Years of Vienna Certificate: this is worth a special event!

Of course, Marlis Kulb organized it, with the help of the international multilingual world champion, Boris Neubauer and his wife, Monika Dissler. Both are involved in the FAKT (Forschungs- und Ausbildungsstätte für Kurzschrift und Textverarbeitung in Bayreuth E. V. → The Bayreuth Research and training center for shorthand and word processing).

## A whole weekend dedicated to shorthand!

The steno-competition of the Austrian Stenographers Association took place on Friday 26 October 2018.

On Saturday the 27<sup>th</sup> and Sunday 28<sup>th</sup>, an international conference of stenographers was foreseen in the magnificent Vienna City Hall: 440 Years of Modern Stenography in Europe. Several speakers described the recent developments of the graphic shorthand in their country, to an interested audience: Detlef Peitz (Germany), Anita Dobos & Bernadette Berencsine (Hungary), Brigitte Biwald (Österreich), Nora Berezina (Russia), Carl Johan Pettersson (Sweden), Rosemarie Koller (Switzerland), Virgene Biggers (USA). Others, enabled to do the trip to Vienna, had sent interesting videos that were projected to the assembly: (Jorge Bravo (Argentina), Tsuguo Kaneko (Japan), Brazil, Finland, Italy ... Prof. Mag, Erich Schmid, Director of the Blind and Partially Sighted Impair Institute in Vienna; who has noted the whole conference on his Braille Stenotype.

Saturday evening, everybody was invited for an excellent dinner in the Waldgrill Cobenzl in the Grinsing borough. It was the opportunity for the price giving ceremony of the steno contest.

At the end of the conference, Danny Devriendt, Intersteno Secretary-Treasurer, congratulated Marlis, and her husband as well, for all the work they have done for Intersteno during so many years, recalling not only the 2005-Intersteno Congress but also the "Youth Days" organized every year in spring, with the support of the City of Vienna.



Participants



Speakers



## International Conference in Vienna

By **Bernadett Berencsi** and **Anita Dobos**

We traveled to Vienna at the of October, from 8 countries (Austria, Belgium, Germany, Hungary, Russia, Sweden, Switzerland and USA). Unfortunately Ludmila Nováková from Czech Republik couldn't take part, because she was ill.

We received a nice invitation from Marlis Kulb and Boris Neubauer. An international conference about shorthand was held at the Vienna City Hall, called '50 Jahre Wiener Urkunde'.

Each presentation was very interesting, especially the presentation of blind Erich Schmied or Virgene Biggers's presentation with O. J. Simpson's story!

We are very grateful to Marlis Kulb, Leo Kulb, Monika Disser and Boris Neubauer for the huge work, perfect organising and for their hospitality and kindness! Very special thanks for the work of Boris's and Monika's daughters Nora and Viola! Thank you very much to all of you! We enjoyed in Vienna a great time! It was a very successful event! For us was a huge honour that we took part in this conference!

We would like to thank you also in German:

Liebe Marlis, lieber Leo, liebe Monika, liebe Nora, liebe Viola, lieber Boris,

wir sind sehr dankbar für Ihre Nettigkeit, Freundschaft und Gastfreundschaft! Wir erinnern uns natürlich sehr gern viel Lachen mit Leo! Wir wünschen Ihnen weitere gute Gesundheit und Alles-Alles Gute! Danke schön für Alles!

Hopefully we can meet next year in Cagliari!



*Farewell dinner*



*After our presentation*



*Virgene Bigger's presentation with O. J. Simpson's story*



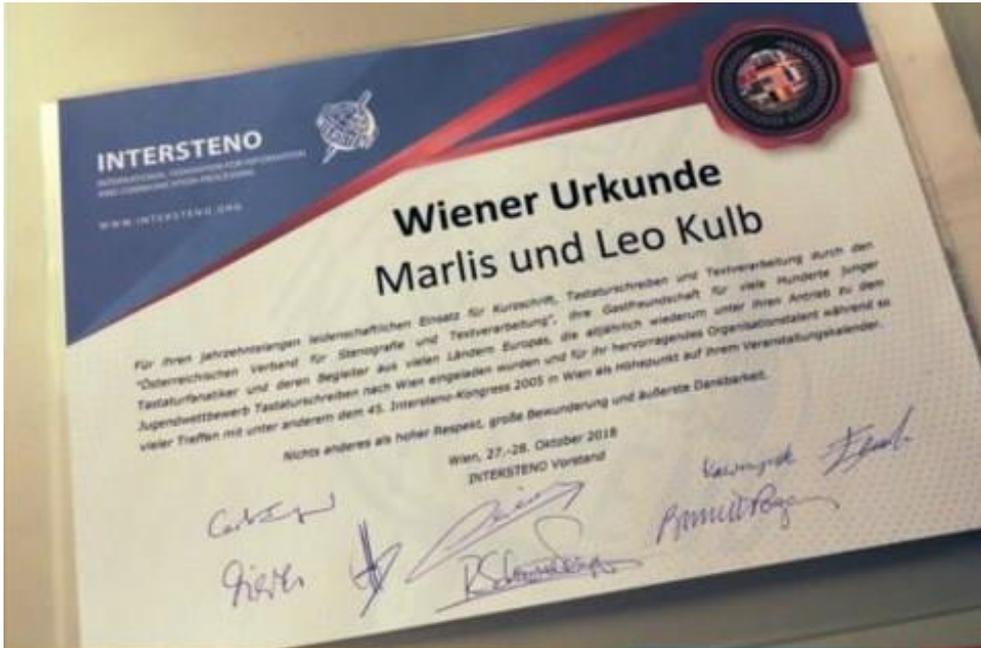
*The speakers received medals*



*The blind Erich Schmied's presentations*



*Speakers*

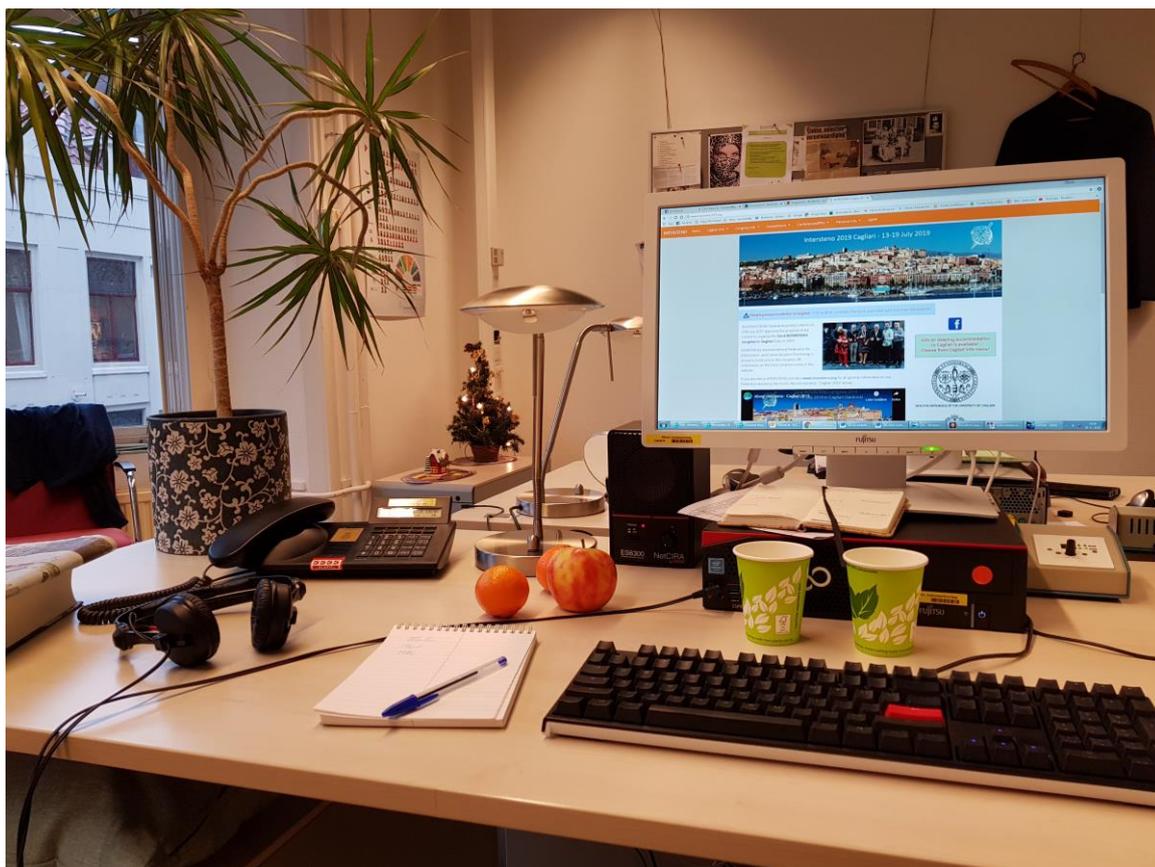


Marlis's and Leo's 'Wiener Urkunde'

## A Mediterranean breeze through the Dutch Parliamentary Reporting Office

**Wouter Zwijnenburg**  
**Dutch Parliamentary Reporting Office**

Colleagues are investigating flight schedules and hotels, colleagues are showing pics of Budapest, Gent, Paris & Zagreb meetings, colleagues are thinking of combining the event with a few weeks holiday on this pearl of the Mediterranean, colleagues are concentrating on their typing skills, colleagues are already collecting speech examples to underline their presentation. Although we still have to survive the winter over here, the Cagliari congress is casting its shadow forward at the reporting office of the Dutch parliament.



As I heard through rather reliable channels, Ms. Marchionne already did a great job preparing the congress. Yes, the Intersteno organization is blessed with members willing to spend a lot of effort and time in organizing this big two-year event.

Of course, we appreciated and enjoyed our previous hosting cities – they were great, weren't they – but I noticed a special enthusiasm when in Berlin our Italian friends offered to organize the next congress on Sardinia. To get a good impression of what we can expect on this island I would advise watching Sorrentino's movie Loro. While watching it I even got the feeling I recognized some of our Italian colleagues in certain scenes.



Let's all have a great winter and spring doing our usual or unusual thing. I sure hope that we will meet in Cagliari, listening to interesting presentations, being nervous for thrilling competitions and enjoying our shared interests.

## News from Argentina

By Victor Gonzalez

During 2018, through the Argentine Association of Parliamentary Stenographers, two training seminars were conducted for the shorthand writers in different cities within Argentina. Firstly, in the Corrientes City Council in May, a seminar was held with related topics to the profession and the participation of Eduardo Mallea Higher Institute of Linguistics, with a high number of participants. Later on, another seminar took place in the city of La Plata in August, continuing with the Association's standards of ongoing training of all our professionals.

On another note, taking place from November 16-18, 2018 was the Tenth International Congress of Parliamentarians and Judicial Stenographers and the XXVI Argentine Parliamentary Session of Shorthand, in the city of Villa Carlos Paz in Cordoba, which was attended by stenographers and shorthand writers from Brazil, Chile, Uruguay, USA and Argentina and included the participation of a Portuguese interpreter. The Congress was organized by the Ibero-american Federation of Shorthand Writers (Federación Iberoamericana de Asociaciones de Taquígrafos), along with the Argentine Association of Parliamentary Shorthand Writers (AATP Asociación Argentina de Taquígrafos Parlamentarios).

The initial activity was the IV Ibero-American tournament of stenography and stenotype where Leandro Iezzi and Jorge Morales got first and second place, respectively. Additionally we carried out was the Ibero-American tournament of correction, stylistic makeup of sentence construction and interpretation of Texts, in which Jorge Morales got first place, Cristian Illuminati second place, and Leandro Iezzi and Blanca Mena got third and fourth. Congratulations on the result and your great efforts!

The main theme of the Congress was very interesting and with a contemporary focus: 'Artificial Intelligence and its Relation to Transcription Activity: Present and Future.' The Congress also performed an analysis comparing the profession to other countries.

The President of the Brazil Association of Stenographers (UNATAQ) spoke about the general situation of stenographers in her country with census data from the parliamentary and judicial spheres.

A researcher at the National University of Córdoba, Professor Luciana Benotti, addressed the topic of the status of computerized speech recognition and that, among other aspects, made some demonstrations of the limitations that this technology has in the current reality in the Spanish language.

Subsequently, Mr. Alexandre da Fonseca, a colleague in Brazil, also talked about the implications of new technologies and the impact they have on all activities to do with shorthand, in particular, an awareness of the new paths to take and the paradigm shifts that we must go through in our profession.

A great contribution was also made by colleague Joshua Foley, from the USA, who told us about his experience in live captioning work for deaf and hard-of-hearing individuals in both live television and in academic settings.

Also, from Uruguay, reviewer Mariela de Los Santos and the director Aldo Deber of the Departmental Board of Montevideo, talked about the work system in that area.

At the end of the first day of the Congress, we all celebrated together Day of the Stenographer, with great camaraderie among all colleagues.

On November 17, Mr. Omar Troccoli of the Senate of Corrientes gave the workshop 'Use of Computer Tools for the Preparation of Shorthand Transcripts', which was very useful for all participants.

Then, Chilean colleague Isabel Quiliñán Olavarría (president of the Association of Stenographers of Chile) and Mario Inostroza Sepúlveda (redactor of the Chamber of Senators of Chile), spoke about 'News from the Stenographers of Chile', and shared the

problems encountered in the Chamber of Deputies in the country due to the decisions made by the authorities to not have any presence of editors and stenographers in the debate room. Among the participants, an exchange of opinions on the issue was generated, showing the solidarity of all the participants with the colleagues of that country.

Also, had the opportunity to talk about the 'Latin American Panorama of Stenographers', analyzing the situation of professionals in the region in a comparative way. Also, Mr. Marcius Oliveira from Brazil was able to present the situation of 'The Stenographers of the Northeast of Brazil'.

On this occasion, with the support of the authorities of the Legislature of the Province of Córdoba, the publication 'Collection of articles of the FIAT' was presented, where some of its authors referred to the submitted works.

The headmaster of Eduardo Mallea Higher Institute of Linguistics, Professor Lina Mundet, presented another topic of great relevance: 'The Progress Made in the Spanish Language.'

Lastly, as a space for all participants to have some fun, stenographer Aldo Romero of the Senate of the Nation gave the workshop 'Tangotherapy for Balance and Concentration of the Stenographer', where we all learned the basics of Tango, a very historically-important dance of our country.



It was a great meeting with participants from different parliaments and fields of work, as well as collaborating with colleagues regarding different experiences and problems. Together we were able to generate new ideas, debate, and above all, be aware that we must rethink the vision of our profession.



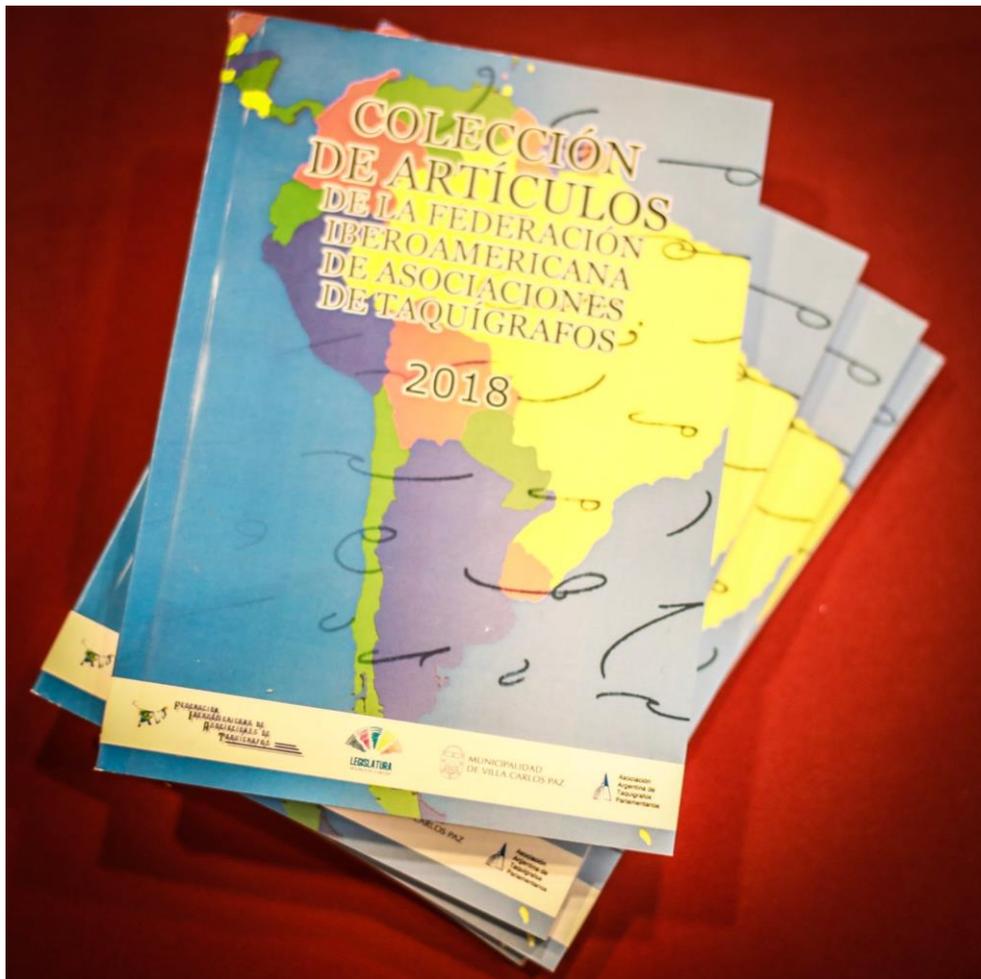












I take this opportunity to wish the whole family of Intersteno, with whom this year I could share and enjoy some beautiful days in Istanbul, a beautiful Christmas with their families and a very happy year 2019. God willing, we will be gathering in Cagliari!

By Jorge Bravo

## The day Walt Disney visited stenographers in Argentina

By Jorge Bravo

In 1941, Walt Disney visited Argentina. At that time, the stenographers' director of the Senate of the Nation was a renowned stenographer and caricaturist, Mr. Ramón Columba, who had several meetings with Walt Disney. That is why Disney visited the Senate of the Nation and more specifically the Stenographers' office, where the photo that accompanies this text was taken. Walt Disney is in the center of the photo and Ramón Columba is on his left. There are also several stenographers from the Senate, including José Westercamp and Federico Barboza, who were also stenographers at the United Nations, and Miguel Palant.



*Walt Disney in the Stenographers' office – Argentine Senat*

## Digital signature in the senate journal of the debates in Argentina

By Jorge Bravo



In compliance with the law of digital signature and as part of the project of incorporation of the digital signature to the documents that are part of the Way of the law, the Argentine Senate has developed an application for the General Director of Stenographers to sign digitally the definitive shorthand report of the sessions, so that said document is editable and complies with the security standards enabled by the current technology in the Senate, ensuring its authenticity through its digital signature.

In this way, the holographic signature is abandoned, and the digital signature is established as part of the process of greater transparency established in the Senate of the Nation. The digital signature constitutes an element that ensures the authenticity and inalterability of the information and the identification of the signer. In this way, the office of Stenographers becomes the first office of the Senate to have this tool: the digital signature.

## Visiting days and training courses

By Jorge Bravo



From the invitations made by the authorities of different Argentinean legislatures, training talks were given in the legislatures of the provinces of San Juan and Mendoza as well as in the Municipal Council of Escobar, province of Buenos Aires. In all cases there were present stenographers, legislative authorities and legislators, students and former students of shorthand courses. In the Mendoza Legislature, for example, the closure was in charge of the vice-governor of the province, promoter of the event; and in Escobar the president and the legislative secretary of the Deliberative council attended the event. (Here PICTURE II: Visit Legislature of the San Juan province /PICTURE III: Visit to the Municipal Council of Escobar, Buenos Aires province)

On the other hand, we visited the stenographer colleagues of the Municipal Council of Rosario, in the province of Santa Fe, and the colleague Ana Fuentes, of Chili; and few days ago the visit of the president of the National Union of Stenographers of Brazil, Adriana Melo, was received. (Here PICTURE IV: Visit to the municipal Council of Rosario, Santa Fe province)

In addition, several stenographers from the Senate participated in the course "From the error to the correct use of the Spanish language", taught at the Litterae Foundation.

## Stenographers and stenotipistes of the senate and the library of the congress in the night of the museums

By Jorge Bravo



On November 10th, the 15th edition of "The Night of the Museums" took place in the Autonomous City of Buenos Aires. The Parliament building was opened from 8pm to 3am and it was visited by approximately 10,000 people. As in previous years, the stenographers of the Senate participated in this important event. There were exhibited books, trophies, diaries of sessions, etc; along with demonstrations of stenography and computerized stenography in real time. Some of the stenotypists also explained their particular experiences in subtitling, particularly in the Oscar awards' TV broadcast and on September 11th 2001, the date when the Twin Towers were attacked.

The Library of Congress and the exhibition the president "Sarmiento y la Taquigrafía" (Twere also opened all night. Sarmiento was the one who promoted the creation of the first Chair of Shorthand in Argentina in 1869, as well as the author of the law by which the office of Stenographers of Congress was created in 1872. (Here: PICTURE V: Exhibition "Sarmiento y la Taquigrafía" – "Sarmiento and the Stenography").

## Parliamentary's stenographer day

By Jorge Bravo



On November 24<sup>th</sup>, the Day of the Parliamentary Stenographer was celebrated in Argentina. That date was established in 1947 by the First National Conference of Stenographers to remember that on November 16<sup>th</sup>, 1946, the Argentinean Association of Parliamentary Stenographers was created.

That is why, in different national, provincial and municipal legislatures, projects were approved, or speeches were made to pay tribute to stenographers

## The end of “drawn words” 5<sup>th</sup> season, the radio program about stenography

By Jorge Bravo, Azat Ambartsoumian, Diana Campi



In November the 5th season of “PALABRAS DIBUJADAS” (“DRAWN WORDS”) came to an end, the radio program dedicated to disseminating the work of stenographers and, the books and magazines of Shorthand of the "Palant Collection" of the Library of Congress of the Nation. This year there have been several interviews and research were also done on various topics: shorthand associations and shorthand journals in Argentina and around the world; the woman and the shorthand; literature and shorthand; the stenographers of some presidents, etc.

In addition, it was broadcasted in two very important cultural events: the "International Book Fair" and "The Night of the Museums", both held in Buenos Aires.

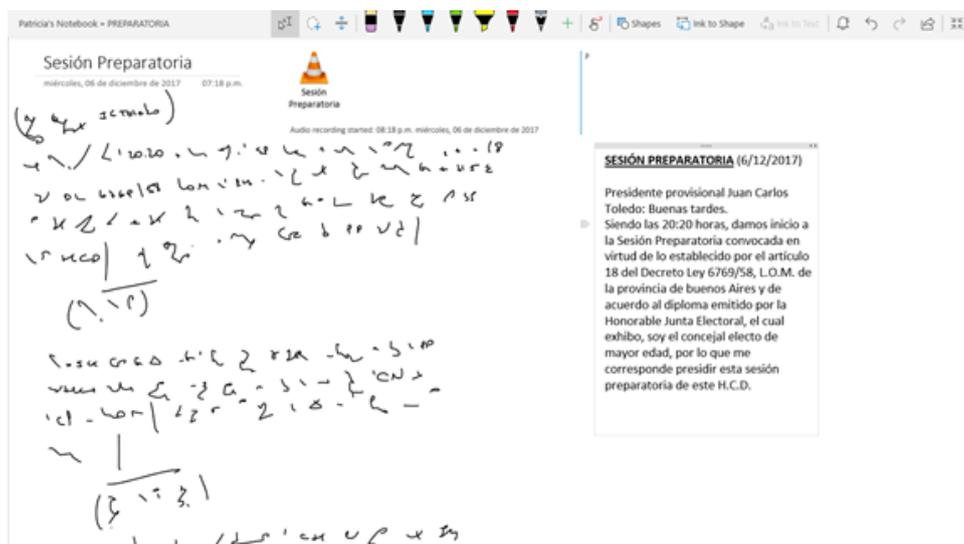
Thanks to the support of the listeners we have reached the 24 Argentine provinces and through social networks we are still friends of 24 countries!

We thank all colleagues from Argentina and other countries as well as INTERSTENO for always supporting our work. We expect you will keep accompanying us all in 2019, the year of the 52nd Intersteno Congress!!! As always, in [www.bcnradio.com.ar](http://www.bcnradio.com.ar), the radio of the library of the Argentinean Congress.

Happy new year for the community of Intersteno!

# Digital “Tachygraphy”

By Patricia Lopez



I have looked into the idea of updating a tool as ancient as tachygraphy –or shorthand– for several years. There are those who believe it obsolete and, therefore, that it has been entirely replaced by stenotype machines. That is not the case, however.

I imagine other veterans of this trade would know just as well that throughout the years there have been many obstacles, hurdles and ordeals that had to be sorted out, be they cassette tape recorders, clunky and heavy typewriters, barely functional text processors. I also imagine that they would be asked the same questions as me. “This is still a thing? Isn’t this entirely obsolete nowadays, what with all the new tools and technologies we have?”.

Currently I would like to clarify the concept of and dignify tachygraphy –I am intentionally not using the term stenography, for I prefer the alternative denomination–, that of ancient Romans before Christ’s time, that of the Spanish who arrived here in Argentina bringing their technique, that which we utilize in parliamentary legislation bodies in many places in the world. I still remark that this is not born of my personal penchant for the art of it –which has been nurtured since I was thirteen years old– but of the necessity to elucidate reasons which would support its longevity, both traditional and digital.

The information age has changed society’s lifestyle and cannot be ignored. That is why synthesizing tachygraphy with today’s technological achievements to expedite its processes, keeping in line with the pace of all other things, holds chief importance.

When I contemplated the future of tachygraphy, it became clear that there need be more establishments for the end of instructing future professionals in the field. That is how, with joy, I could take a lead role in the founding of the *Parliamentary Tachygraphy School*, established in the council of the city of Escobar in Buenos Aires province. I have worked there since year 1983, first as a tachy dactylographer, later as Tachygraphy Chief and today as chief of tachygraphy and Information Technology.

Having finished the first course year in 2016, I sensed the need for a tool to aid the students with their instruction, and so I wrote and published the book “Aprendiendo a dibujar palabras, curso de taquigrafía” (Learning to draw words, tachygraphy course), where I expound the rules and principles of the Martí–Escobar system, alongside my personal contributions to it throughout a career of over three decades.

The creation of said book required a way to process the symbols with a computer. Being chief in tachygraphy and information technology, I married the two. After researching for

options, I came across graphics tablets, which seemed a natural fit. The result was quite inspiring, and I ordered the publishing of a hundred issues for the first edition. Said edition also holds mention of this use for graphics tablets.

Meanwhile I started looking into what computer apps could be used as a work environment so as to take shorthand of live talk sessions using only the computer and the tablet. Having found an answer to this, I then implemented a new work method. The results became clearly optimal, quality and speed wise. Today I still employ the same methodology and what's more, I also incorporated it into the advanced phase of the course that I dictate. They will become the digital shorthand professionals of the future.

If I had to summarize how significant of an advantage this represents to this domain, then I would point out that keeping all the resources and tools integrated in one compact space makes all the difference in terms of efficiency. A minute of shorthand equates a minute of typed transliteration which, incidentally, appears right there next to the shorthand on the screen.

### **Advantages**

Here is a bullet point listing for the advantages I've identified in this methodology:

By adapting and evolving into the digital age, we demonstrate that our craft is timeless and can be reimaged and reinvented as necessary.

All of this is independent from spoken language and shorthand system of choice. It can be implemented anywhere, by anyone, provided they have been instructed in tachygraphy.

There won't be a need for a pencil, paper, eraser, and all the dirt and mess and carrying things around that those bring. Simply by keeping a portable computer and a pen tablet around, the job will become more ecosystem and spine friendly. These digital tablets require less pressure exerted on them for the lines to show, which translates to a smaller probability of coming down with something like Carpal Tunnel Syndrome or Tendinitis.

There are options that allow recordings and shorthand to be intertwined so as to play the audio file right where the symbol was drawn. Needless to say, this speeds everything up significantly.

The text translation that's done through this can easily be copied and brought over to a word processor for further editing and formatting. This coupled with your own autocorrect tweaks can further speed up your process.

This is a collaboration friendly environment, for syncing files and sharing them among a group usually makes each member's contributions be digitally signed with their account name.

There are software options that come with smartphone and internet browser implementations apart from the computer ones, which then can be used to sync up with a file *as it is being made*. That allows for streaming of what others would be writing down, in real time.

I can vouch for the reliability of this new paradigm. It's only a matter of daring to try it out and avoiding discouragement. Mistakes are made by everyone, and they are tools par excellence for the goal of improvement.

## BIVR

By Leah Willersdorf

StenoFever is back for 2019, with at least two spectacular events back to back. What better way to kick off your summer?!



We are delighted to announce that BIVR Awareness Week 2019 will run from Tuesday, 9 July through Thursday, 11 July next year!

With Intersteno Cagliari 2019 starting on Saturday, 13 July, why not get your first feeling of StenoFever in London at our three-day event before venturing over to stunning Sardinia for Intersteno's 52nd Congress?

Perhaps you're thinking of holidaying in the UK during the early summer? Well, don't forget to pop these dates in your diary.

Our venue and agenda is in the process of being finalised and will be announced ASAP, so stay tuned to find out all the goings-on at our third BAW event.

You can find us on Facebook and on Twitter (@BIVR\_TWEETS). Also, if you weren't on our mailing list last year and would like to be added, please message us at [BIVRawareness.leah@gmail.com](mailto:BIVRawareness.leah@gmail.com) so you can receive the latest updates direct to your inbox!

We look forward to seeing you in the UK and Italy next year!!



**#BAW2019**  
**#StenoFever**

## The Betty Willett award

Mrs. Elisabeth “Betty” Willett was a longstanding member of BIVR, having signed our Member’s Register on 22 September 1971. In 1974 Betty was elected on to the Council of the Institute and in 1975 was the first woman to become President, a position she held on a further five occasions, once for two successive years overseeing our amalgamation with the National Society of Stenotypists. Betty passed away unexpectedly on February 1, 2017.

Betty was our most senior member of Council, latterly as Chief Examiner. Her last task at the time of her passing in February 2017 was that of rewording and setting exam criteria for new members.

Betty was the mother of Council, Queen of BIVR and always had members’ interests at heart, including championing (whilst always speaking with quiet authority) for fair remuneration, and being a staunch campaigner for maintaining the Institute’s high standards of transcription.

With the introduction of Computer-Aided Transcription in the 1980s, Betty led the way in becoming a realtime reporter, a captioner for D/deaf people, and very possibly being the first Speech-to-Text Reporter (STTR). She voluntarily encouraged and assisted many members to achieve similar goals, freely devoting many hours of her time, and showed little sign of slowing down. She spent a great deal of energy moving the Institute forward during the ever-changing challenges which face the profession.

Betty covered all manner of assignments and travelled, along with her colleague and friend Lindsay, to many countries, including Venezuela, Finland, Japan, Zimbabwe, Rome and Hong Kong.

Betty received many accolades, in particular being honoured by the Institute with Life Membership in May 2005 and in 2006 being the recipient of the Joseph Maitland Robinson Award for her work as an STTR.

BIVR members, past and present, would have a story or two to tell about their interactions with Betty and share their memories of her, whilst expressing that if it weren’t for Betty, they wouldn’t be where they are now.

Through her dedication, passion and commitment to our profession, not only will Betty live on in our hearts but she will also live on in the fingers of many of the UK’s shorthand writers.

To pay tribute to Betty, the Institute put in place a distinguished award in her name. In September, Claire Hill, an Intersteno member and long-time BIVR member, was awarded the inaugural Betty Willett Award.

Claire was nominated as follows:

*“I wanted to write a detailed appreciation that fully does Claire justice, but I’ll just note a few of the reasons that spring to mind about Claire who has:*

- *the most varied skill set of any reporter I know which has ensured that she is able to work in virtually any arena that the profession serves;*
- *is constantly striving to improve her knowledge and skills and she is fearless in taking on new tech challenges;*
- *is passionate about providing her clients with the highest level of service;*



- *is extremely generous in sharing her knowledge and expertise at a personal level and she has always been keen to participate and give her time and effort to the wider profession over the years despite a very busy schedule;*
- *manages admirably to balance her kindness and sensibility with well-honed business acumen in a challenging market!"*

To add to those glowing words, the Institute is aware of how highly thought of Claire is by her peers, as well as clients and organisations, as can be seen on social media as well as murmurs we hear in the industry. All of this doesn't even mention the fact Claire single-handedly organised and hosted the City & Guilds course for current STTRs as well as those who were interested in maybe becoming one. Oh, and add to that the fact that Claire is the first (and only, so far) to receive 100% on the QRR (Qualified Realtime Reporter) exams!

All this adds up to someone who met the criteria the Institute was seeking of someone who went above and beyond for their profession. We think Betty would agree as well!

Claire was unable to attend in person to receive the award, but she did give us a few words to read out on her behalf (see below). A month later, Claire was delighted to have this award physically in her possession, with big smiles all round.

*"Thank you very much for this award. It's a real honour to be recognised by one's peers, and knowing the high regard in which we all held Betty, it's particularly gratifying to receive an award in her name. I'm sorry I couldn't be there today to receive it in person.*

*I've always tried to keep abreast of any new developments in reporting, whether that be new software, speech-to-text or remote working, and I always try to add value whenever I attend a job, and hopefully make the clients believe that a live stenographer, whether on-site or remote, is always the best option.*

*I've been really impressed with the BIVR in the last few years, I think you're revitalising a profession that suffers from a real image problem in the wider world, so thank you for your hard work and please keep it up, as we all benefit.*

*I'd also like to thank all my co-workers over the years, whether fellow reporters, editors or*

*captioners, because the best results are achieved when we work together in pursuit of the same goals.*

*I look forward to having the award in my hand, and it will have pride of place in my home!*

*Thank you again.*

*Claire."*

On behalf of the President, Council, and the Membership of the British Institute of Verbatim Reporters, we wish our Intersteno family and friends the merriest of Christmases and happiest of New Years! - Leah Willersdorf, Vice President BIVR



## Modern marries ancient

By Niklas Varisto and Stefan Loeffler

### Writing shorthand on a tablet computer\*

A very important feature is that the pencil is connected to the tablet by Bluetooth. It does not register just any by the way, seems possible only by the latest technological developments.

**Technological trends.** These are hard times for pen stenography. We all know how hard it is to convince people of the benefits of learning this noble art in the era of technology. But that does not mean we cannot make the most of the new technology: in fact, there have never been such amazing tools available to us shorthand writers as today.

There is free computer software that allows us to speed up or slow down audio files without changing the pitch, thus making it much easier than before to create practice dictation files for different speeds. There are computerized pens that can record audio and link it to the notes made on paper – something that you would have associated only with James Bond movies. And more lately, writing on tablets [Footnote 1] has become a viable option. I have tried all these, but here I shall share my experiences of tablet shorthand.

Unfortunately, I have not been able to test different computer brands (typically referred to as “hardware”) or operating systems. That would be expensive and time-consuming. This article focuses on one solution that I have found to work well, but I am sure other (and maybe less expensive) options may work equally well.

**One possible hardware solution.** Apple\*\* introduced their rather expensive tablet computer iPad Pro in 2015, first with a 12.9-inch screen and later as a 9.7 inch version. Both are more powerful than the regular iPads. I bought the 9.7 version in late 2016 as an alternative to a laptop for travel and everyday use. The Apple Pencil that was introduced together only with the iPad Pro was one contributing reason; I was intrigued by the idea of writing shorthand on a tablet.

As of March 2018, Apple released a new regular 9.7 inch iPad that is compatible with the pencil at less than 400 euros, so at 500 euros (including the pencil), it is a much cheaper option now. Despite significantly lower computing power, according to the producer, it should also be fully sufficient for all options described in this article.



random touch on the tablet surface, only what you write or draw with the pencil; otherwise the flesh of the hand would make unwanted marks on the virtual paper. The Bluetooth connection ensures that only the tip of the pencil is registered, so you can rest your palm against the surface just like on paper. In addition, the tablet is very slim (7.5 mm) and does no longer heat up too much.

One advantage of tablets compared to regular computers is the amount of free or inexpensive applications (computer software mostly referred to as “apps”). I started searching for handwriting apps for tablets and discovered that there are quite many. Some are free, some cost a few euros. Many of them can even record audio and synchronize it to the handwriting, so I thought: Why not use this feature as a two-in-one solution for records from meetings? What could be better than writing notes from a meeting in steno and also have an audio recording synchronized to the notes?

**A software solution.** After reading some reviews, I settled on an app called Notability. It costs approximately 10 eu-ros, which is more than some of the comparable apps, but still not a big investment. So, what is the app capable of? Here are a few very handy features.

1) There is essentially no delay when writing on the tablet. The writing appears on the screen in real time. That,

You can adjust the space between the lines on the virtual paper. This is important to accommodate different handwriting styles and preferences.

You can choose among many different stroke widths. That means you can adjust it to suit your own preference, or how “sharp” you like your pencil.

The screen recognizes pressure. That means you can make thicker, stronger lines by pressing harder on the tablet surface, probably even better than you do with a regular pencil on paper. This is essential in almost all pen shorthand systems.

It is easy to scroll the virtual paper with your fingers as you get closer to the bottom of the screen. You can view it as one endless roll of paper that you can scroll when you need more.

You can record audio while writing. When the meeting starts, just press record and every stroke you write will be linked to the audio recording. Want to check what was said at a certain point of the meeting? Just tap your steno notes, and the app will start playing back the audio from where you tapped.

Notes are stored in the tablet or on other media. [Footnote 2] You can also have them backed up automatically in the “cloud”, i. e. on internet servers, so that you have synchronized copies both on the tablet and in the cloud. The notes can easily be sent in different file formats (such as pdf) by email, cloud

2 services or social media, or simply printed on paper.

There are many more features. For example, you can write in different colours if you want, and you can underline parts with a yellow marker tool, which is nice e. g. if you work through your notes from yesterday’s meeting once again. Further, you can erase what you just wrote by pressing a virtual “undo” button in the toolbox. You can erase larger portions of the writing with an eraser tool and copy or cut and paste parts of the writing with a copy tool. This way, you can e. g. autograph articles in steno magazines etc.

**The tablet put to practical use.** [Foot-note 3] I had tested the tablet and pencil at a computer store and liked the feeling of it, but was not sure how well the shorthand part would work in reality, since I had not heard of any stenographers using it. I figured that since the tablet is good for many other purposes too – like email, internet and music applications – it would not have been the end of the world if it had not worked out for me.

The first big test was at the annual meeting of the Nordic Council in October 2016, where shorthand writers are still employed. Usually I write steno with pencil and paper, but I wanted to test the tablet since there is always a digital recording to rely on as well.

I was pleasantly surprised that the tablet and pen combination instantly worked very well for me. It took a while to get used to the slick surface of the tablet, but I did not experience problems with the software or the tablet; the strokes registered properly and the audio recording was consistent. At the end of the session, I had not used any paper at all but instead made all steno-grams on the tablet. The test was quite successful and I have used the tablet for many other occasions since.

The tablet is very handy for small meetings or lectures and I often take the tablet with me instead of a piece of paper that can easily be misplaced. I can choose to write and record audio or only write, depending on what is needed. Since the notes and audio are stored in the cloud, I can later even view them on my mobile phone.

Unfortunately I do not use tablet shorthand at my regular reporting work at the Records Office of the Parliament of Finland, since shorthand is no longer part of the work process. There is not really any time to use it in the process, otherwise I would certainly do. In free-lance work such as council meetings, I can of course use shorthand and the tablet.

[e-news 87, December 2018](#)

INTERSTENO

International Federation for Information and Communication Processing

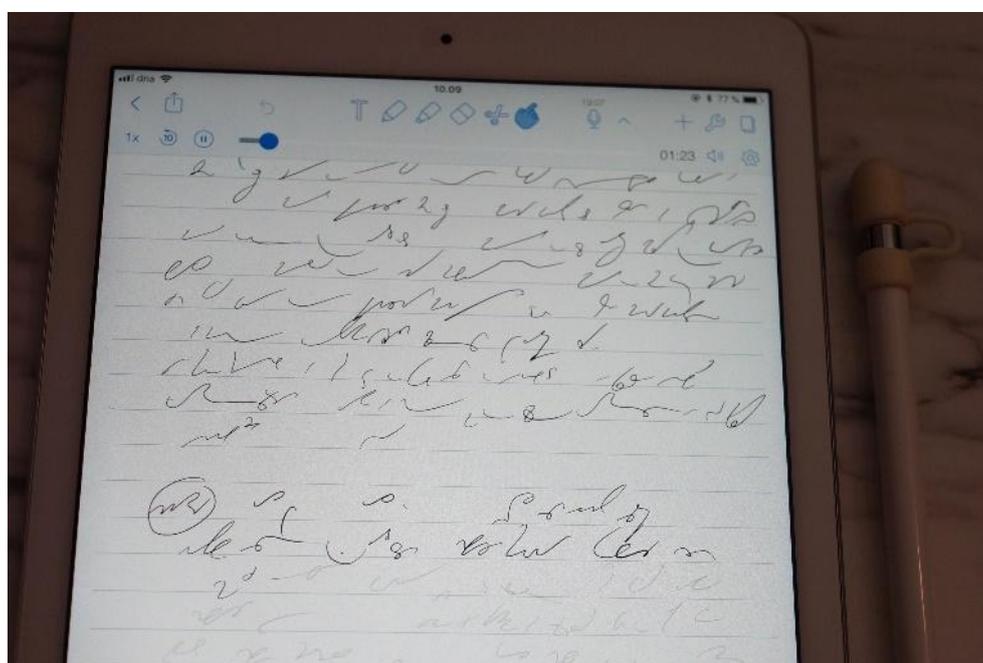
There seems to be a new perspective for parliaments: At many parliaments, interjections (short comments from members of parliament) are noted in the records. The combination of tablet and shorthand could be a very handy method for this. Because the audio is linked to the notes, it would be easy to put the interjections in the right place in the records for the stenographer.

3

*The tablet allows to record verbatim or non-verbatim, live notes in meetings. The light colored graphics shows what is still to come in the play-mode.*

Last but not least shorthand text communication via email or online chat services (such as Threema, Signal etc.) may be as easy as using your keyboard. [Footnote 4]

**There are pitfalls.** Like with any technical device, there are potential pitfalls. You must remember to charge the devices so that both the tablet and the pencil work throughout the meeting. Also, the microphone of the tablet will record any sounds close to it, including the sound of the pencil on the screen. In my experience the sounds are not loud enough to drown out the speaker, but if you want to eliminate these noises, you will have to connect an external microphone.



Both the pencil and the tablet surface are quite slick, and the surface does not have the friction of paper, so it takes some time getting used to. To me, writing on the screen does not feel as good as on paper but it is quite decent, and you get used to it. There are also screen protectors that make the screen feel less slick and more like paper. I have recently tried this and had a good experience; it makes it feel much closer to writing on paper. Hand sweat can make the pencil a little slippery, but you can buy or make rubber grips yourself to avoid this.

The Apple Pencil costs approximately 100 euro, a new basic iPad from 370 up-ward and the iPad Pro from 750 up-ward.

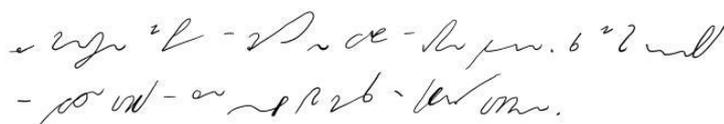
4

*The tablet supports "smooth" graphics right from the beginning, i. e. without the need of any later graphical "overhaul".*

There are probably less expensive solutions, although I cannot comment on their functionality since I have not tried them. However, if you are using a tablet like this anyway, the cost for a tablet pencil and a handwriting app is not that big.

Many apps can recognize regular hand-writing, but even at this technology level the thought of converting steno-grams into regular text does not yet seem realistic.

**Who is it for?** The combination of tab-let, pencil and software is not limited to stenographers. Just about anybody making handwriting notes can benefit from it, for example journalists. If you record a meeting or an interview, the audio is synchronized to whatever you are writing in the app at the moment, whether using steno or regular hand-writing. You can quickly jump to any part of the audio recording where you have made notes. Of course, the appli-cation is not limited to meetings or re-cordings. You can write stenograms for shorthand magazines or online courses or whatever purposes you can think of.



Of course, the question arises: Is this the kiss of death for shorthand? Why do you need to learn shorthand if a 10 euro app can record a meeting and you can synchronize the recording to anything you write? Time will tell, but I believe the future of steno is about finding peo-ple that are fascinated by the art, about making it accessible and attractive to them and possible to integrate into modern technology. I believe that the possibility of using stenography on many "platforms" is going to make it more, not less, attractive.

\* Niklas Varisto is a reporter at the Records Office of the Parliament of Finland and a freelance shorthand reporter. Niklas was a World Champion in 1998 and 2003 (INTERSTENO multilingual shorthand contests) and regularly takes part in INTERSTENO speed contests. Stefan Loeffler helped coordination and translation of the article. Stefan works as an economic consultant and is a short-hand teacher.

\*\* A statement on the products mentioned in this article: The authors are in no way affiliated with any of the brands mentioned in this article. The authors have not tried or tested all the products, they are only some examples of what is available on the market. Some tablet alternatives for hand writing: Apple iPad, Google Pixel, Lenovo Yoga Book, Microsoft Surface Pro, Samsung Galaxy Tab. Screen protectors: Paperlike, ClearView, Tech Armor. Computerized smart pens with audio recording: Livescribe smartpens (models: Pulse, Echo and Sky Wi-Fi), Neo Smartpen.

Footnote 1: A tablet computer is a computer that is practically reduced to a screen: both keyboard and components such as processor are put into a minimum-sized "flat box". Together with a wire-less internet connection, that makes it extremely mobile and a new trend set by Apple Inc. only in 2010.

Footnote 2: The steno tablet can also be used in an offline-only mode.

Footnote 3: Please see more pictures and two vid-eos on the process of writing and reading (record-ing and replaying) on: [www.t1p.de/stenotablet](http://www.t1p.de/stenotablet).

Footnote 4: The authors encourage a paper covering experiences or recommendations in this field of "computed-based handwritten communication".

## Event Calendar

A special note: The deadline to submit articles for the March 2019 *e-news* is 25 February. Thank you to all contributors – past, present and future – for keeping us informed and connected!

February 9-16, 2019	Court Reporting & Captioning Week
March 4-31, 2019	Registration for 2019 Intersteno Internet Keyboarding Competition
July 9-11, 2019	BIVR Awareness Week
July 13-19, 2019	Intersteno 52 <sup>nd</sup> Congress, Cagliari, Sardinia
July 24-27, 2019	NVRA Annual Convention, New Orleans, Louisiana
August 15-18, 2019	NCRA Annual Convention, Denver, Colorado

*This newsletter is published under the responsibility of the Board of the International Federation for Information and Communication Processing - Intersteno - and sent to all e-mail addresses of persons participating in the work of the members of Intersteno known to the Board. Contributions to the newsletter can be sent using the form on the web site. Publication will take place at the discretion of the Board. Text with signatures cannot reflect the official position of the Board of Intersteno, but only that of the authors.*

*Please use [news@intersteno.org](mailto:news@intersteno.org) for any additional comments as well as names of persons and entities interested in receiving this message. If you do not want to receive this letter, please send an email stating only UNSUBSCRIBE in the object of the message.*

[www.intersteno.org](http://www.intersteno.org)

INTERSTENO

International Federation for Information and communication Processing  
Internationale Föderation für Informations-und Kommunikationsverarbeitung  
Fédération internationale pour le traitement de l'information et de la communication



# Touch-typing for better spelling and narrative-writing skills on the computer

Marjolijn van Weerdenburg<sup>1</sup>  | Mariëtte Tesselhof<sup>2</sup> | Henny van der Meijden<sup>3</sup>

<sup>1</sup>Behavioural Science Institute, Radboud University, Nijmegen, The Netherlands

<sup>2</sup>Tesselhof Education, Raalte, The Netherlands

<sup>3</sup>Educational Science, Radboud University, Nijmegen, The Netherlands

## Correspondence

Marjolijn W. C. van Weerdenburg, Behavioural Science Institute, Radboud University, Nijmegen, The Netherlands.  
Email: m.vanweerdenburg@pwo.ru.nl

## Abstract

This study investigated the effect of a touch-typing course on the spelling and narrative-writing skills on the computer of elementary school students. Data of 207 students in Grades 4, 5, and 6 were analysed using a pretest–posttest design. Students in the experimental group ( $n = 154$ ) followed a touch-typing course, and those in the control group ( $n = 53$ ) did not. The experimental group showed more progress in typing, spelling, and narrative-writing skills on the computer than the control group. It can be concluded that the touch-typing course had a positive effect, not only on typing skills but also on spelling and narrative-writing skills on the computer.

## KEYWORDS

elementary education, keyboarding skills, narrative writing, spelling, touch-typing

## 1 | INTRODUCTION

Students are increasingly given the opportunity to work on the computer in both elementary and secondary education. Moreover, in teaching practice, word-processed assignments are more and more requested (Mogey et al., 2008). Quality of the writing product by means of a word-processing program is likely to be higher when typing skills are better (Goldberg, Russell, Cook, & Russell, 2003; Graham, McKeown, Kiuahara, & Harris, 2012). Furthermore, elementary teachers subscribed to the importance of using word-processing programs and of touch-typing skills for students to perform well on standardized tests (Poole & Preciado, 2016). However, touch-typing instruction is not yet part of standard school curricula in most countries (Connelly, Gee, & Walsh, 2007; Poole & Preciado, 2016; Van Gelderen, 2010; Wollscheid, Sjaastad, Tømte, & Løver, 2016), and research on the effects of touch-typing interventions on school performance such as spelling and writing has been limited (Christensen, 2004). Therefore, in the present study, we investigated the effect of a touch-typing course on students' spelling and narrative-writing skills on the computer.

Learning to write in elementary school can be seen as a multidimensional process whether the writing is done with paper and pencil

or by typing on keyboard. During this process, three components draw on the same cognitive resources of the working memory: (a) low-level transcription skills (handwriting, keyboarding, and spelling), (b) executive functions (planning and reviewing), and (c) high-level text generation skills (formulating sentences and discourse). An increased demand by one of these components on working-memory resources will limit the availability of it for the other two (Berninger & Winn, 2006). New to-be-learned transcription skills can be automatized and thereby free up working-memory capacity, which in turn can be devoted to high-level cognitive processes of writing whether text is generated via paper and pencil or keyboard (de Graaf-Peters, 2008; Hayes & Chenoweth, 2006).

Writers with beginning keyboarding skills concentrate mainly on key location rather than on composition of the text (Connelly et al., 2007; Johansson, Wengelin, Johansson, & Holmqvist, 2010; Ouellette & Tims, 2014). They often use the visually guided strategy (Yechiam, Erev, Yehene, & Gopher, 2003); they are called “keyboard gazers” searching for the right keys to press, and they do not place their hands and fingers in a fixed position. This visually guided strategy tends to be less efficient than the touch-typing strategy during which hands are placed in a fixed position on the keyboard as a starting point for

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2018 The Authors. *Journal of Computer Assisted Learning* Published by John Wiley & Sons, Ltd.

pressing particular keys by utilizing up to all 10 fingers without looking at the keyboard (Johansson et al., 2010). It could be argued that cognitive load of touch-typists who have automatized their touch-typing is lower than that of typists who use the visually guided strategy, because touch-typists can read and type simultaneously and therefore focus more on the content rather than on the mechanics of written work production. Consequently, their text output might be of better quality as compared with typists without this automaticity (Alves, Castro, & Olive, 2008; Christensen, 2004; Freeman, Mackinnon, & Miller, 2005; Johansson et al., 2010).

In the literature, there is a debate about the minimum age at which a touch-typing course can or should be taken by students. Some authors have argued that students aged 7 years are old enough to follow a touch-typing course, because at that time, they have sufficient level of fine-motor control, letter recognition, and word identification necessary for computer access (Chwirka, Gurney, & Burtner, 2002). However, a touch-typing course might be more effective when students are between 10 and 12 years old because then they have a shorter learning curve (Freeman et al., 2005; Rogers & Case-Smith, 2002; Stevenson & Just, 2014). Poole and Preciado (2016) found that 48.5% of elementary teachers indicated Grades 1 to 2 as the ideal time to begin teaching touch-typing and 43.5% suggested Grades 3 to 4.

### 1.1 | Effects of typing on spelling

Research on typing and spelling has mainly focused on the differences between typing and handwriting. A review of studies on this topic by Cochran-Smith (1991) showed that, in general, typed texts were longer and contained fewer spelling errors than handwritten texts. Furthermore, students worked longer on a writing assignment and revised the assignment more often when keyboarding than when handwriting (Cochran-Smith, 1991). It should be noted, however, that only two studies in this review were conducted among elementary school students.

In 1990, Cunningham and Stanovich examined three strategies to develop spelling skills among 7-year-old children: handwriting words, sorting letter tiles, and typing words on a computer (Cunningham & Stanovich, 1990). They found that children in the handwriting condition produced more correctly spelled words than children in the other two conditions. On the basis of this result, they concluded that handwriting was the best strategy to teach children how to spell. However, a replication of this study questioned this conclusion by showing no difference between the three conditions (Vaughn, Schumm, & Gordon, 1993). Furthermore, Masterson and Apel (2006) investigated the effect of typing on spelling in children from Grades 2 to 6. No difference in quality of spelling between the handwriting and typing conditions was found. However, differences were found between more fluent and less fluent typists. The authors argued that the visually guided typing strategy came at the expense of spelling accuracy and that better typing proficiency might reduce the cognitive demands on the working memory and, consequently, might improve spelling accuracy. A similar result was found among 40 students in Grade 2 (mean age 7 years and 5 months) by Ouellette and Tims (2014), who found no difference on a word-recognition and spelling test between the typing and handwriting conditions but also found that slower

typists obtained lower scores on these spelling tests than more proficient typists (Ouellette & Tims, 2014).

### 1.2 | Effects of typing on narrative-writing skills on the computer

Several studies have investigated the relation between typing skills and the quality of a narrative-writing product. Most of them concerned the general use of a word-processing program, rather than the typing fluency and found positive effects of these programs on different writing outcomes from Grades 4 to 12 (Graham & Perin, 2007; Morphy & Graham, 2012). For example, Goldberg et al.'s (2003) meta-analysis on the comparison of writing with computers versus writing with paper and pencil in K-12 students indicated that students who used the computer produced longer texts than students who wrote with paper and pencil. Moreover, the quality of digitally produced work was higher than the handwritten work. On average, the effects were larger for middle and high school students than for elementary school students. More recently, a meta-analysis by Graham et al. (2012) was conducted on writing instruction for students in the elementary grades. In 10 studies, effectiveness of the use of a word-processing program of elementary school children was assessed. Seven out of these 10 studies showed positive effects in favour of the use of a word-processing program on quality of the typewritten product. Instruction of text transcription skills like spelling, handwriting, and keyboarding was beneficial for quality of writing. However, in many of the studies showing no effect of the use of a word-processing program, students had little prior typing experience (Graham et al., 2012). Thus, typing proficiency may be a moderator in the relation between typing and the quality of the typewriting product. This moderating role of typing proficiency was indeed found by Alves et al. (2008) who selected adult writers ( $N = 34$ ) of low and high typing skills to perform dictation and composition tasks. According to the authors, low typing skill had a "detrimental" impact on text quality, for example, slow typists produced fewer words per minute, shorter texts, less lexical density, and less lexical diversity than fast typists did (Alves et al., 2008). In addition, Connelly et al. (2007) emphasized the importance of typing proficiency. They found that the quality of narrative writing in the handwritten scripts was better than in keyboarded scripts of 300 children in elementary school. However, they also found that handwriting speed was consistently faster than keyboarding speed across all ages. They emphasized the fact that explicit instruction in touch-typing was absent in the classrooms, and they stated that this instruction is needed to develop keyboarding fluency and unlock the full potential of the word processor for children's writing (Connelly et al., 2007).

Only one study by Christensen (2004) investigated the effects of typing on the quality of narrative writing on the computer by including an intervention to improve typing proficiency. In this study, 35 students aged 13 years and 3 months were matched on gender and typing scores and randomly assigned to either an experimental ( $n = 18$ ) or control ( $n = 17$ ) group. The experimental group followed a typing-skill program, which provided sequenced practice in typing letters and words. When students reached a criterion of 40 letters per minute, they were advanced to the next level in the program. The control group did not

follow the typing-skill program but instead were encouraged to daily write whatever was significant for them each day to complete a written journal that was typed on a desktop computer using a word-processing program. Quality of typewritten text (next to accuracy of spelling and grammar) was scored on creativity and originality of ideas, logical organization and structuring of ideas, comprehensiveness and elaboration of ideas in relation to the topic, and pragmatic awareness and sensitivity to audience. Results showed that the experimental group made significant more progress than controls on these measures of quality of typewritten text (Christensen, 2004).

### 1.3 | The present study

From the above, it can be concluded that typing skills are related to elementary school students' spelling and narrative-writing skills on the computer. However, little research has been executed on keyboarding instruction. Only one study investigated whether improving typing skills has a positive effect on narrative-writing skills on the computer, and results indicated that this was the case (Christensen, 2004). As far as we know, no studies have been published in which spelling and narrative-writing abilities are tested in the same sample of elementary school children. This is relevant because according to Olinghouse (2008), mechanisms as handwriting and spelling are important predictors for narrative writing, for example, transcribing ideas into language. In addition, handwriting fluency is related to the quality of composition (Christensen, 2004). Writing skills in elementary school are often assessed in word and sentence dictations. However, dictations give hardly any information about the ability of the child to use language creatively (Van Koss Torkildsen, Morken, Helland, & Helland, 2016). Keeping this in mind, we selected three tasks that had to be performed on the computer: (a) a typing task to assess typing ability (similar to handwriting ability), (b) a dictation task to assess spelling ability, and (c) a narrative-writing task. These tasks were carefully selected, on the basis of their use in Dutch typewriting institutions and the educational system. The typing task was a text used by the *Dutch Alliance of Stenography and Typewriting* for final examination. The spelling task was a dictation test that was commonly used in Dutch education for assessing spelling. The narrative-writing task was a picture elicitation task to elicit written narratives, which reduced the effect of familiarity with written-language schemas that are largely acquired through reading comprehension (Williams & Larkin, 2013). It was a validated Dutch test for assessing writing skills with paper and pencil, with good psychometric characteristics such as reliability, validity, and norms (Verhoeven & Vermeer, 2001).

The present study is the first to investigate the extent to which enhancing typing skills can have an effect on both spelling and narrative-writing skills on the computer. Therefore, the aim of the present study was to investigate the effect of a touch-typing intervention not only on typing skills but also on spelling and narrative-writing skills on the computer. We used a design with an experimental group receiving a complete professional touch-typing course and a control group who did not receive this course. We formulated two research questions. The first question was "To what extent are students' typing skills related to their spelling and narrative-writing skills on the computer?" Evidence for these relationships would strengthen our premise that improving

typing skill might also improve these spelling and narrative-writing skills. We expected that typing skills (measured in keystrokes per minute) were related to students' spelling proficiency (Cochran-Smith, 1991; Ouellette & Tims, 2014) and narrative-writing skills (Alves et al., 2008; Connelly et al., 2007). The second research question was "To what extent is there a positive effect of improving touch-typing skills by a professional touch-typing course on elementary school students' spelling and narrative-writing skills on the computer?" We hypothesized that an intervention aiming to improve students' typing skills would have a beneficial effect on these measures (Christensen, 2004) because of a decreased demand on working-memory resources due to the automaticity (Berninger & Winn, 2006).

## 2 | METHOD

### 2.1 | Participants

Two hundred thirty-four students in Grades 4, 5, and 6 (from 10 to 12 years of age) were recruited to take part in the experiment. The students attended 20 elementary schools in the east of the Netherlands. Parents of 17 students in the experimental group and one in the control group did not provide permission to take part in this study. Ten students were removed from the dataset for reasons of quitting before finishing the course ( $n = 4$ ), of missing pretest scores ( $n = 2$ ), and of missing posttest scores ( $n = 4$ ). In total, data of 207 students were analysed: 154 in the experimental group and 53 in the control group. Boys and girls were equally divided over the experimental and control group,  $X^2(1) = 0.86$ ,  $p = 0.35$ , and over grades (4, 5, and 6),  $X^2(2) = 3.01$ ,  $p = 0.22$ . However, grade level was not equally divided over both groups,  $X^2(2) = 8.49$ ,  $p = 0.014$ . As can be seen in Table 1, the proportion of children in Grade 5 was the largest in both the experimental and control groups, with 44.2% and 49.1%, respectively. However, in the experimental group, children in Grade 6 formed the smallest group (19.5%), whereas in the control group, children in Grade 4 were relatively underrepresented (17.0%).

### 2.2 | Measures

On both pretest and posttest, all participants were assessed by three tasks on the computer, that is, a typing, a spelling, and a narrative-writing task.

#### 2.2.1 | Typing task

In the typing task, the participants were asked to retype a text as precisely and as fast as possible including capitals, commas, and full

**TABLE 1** Number of participants by grade and group

	Grade			Total
	4	5	6	
Group				
Experimental	56 (36.4%)	68 (44.1%)	30 (19.5%)	154 (100%)
Control	9 (17.0%)	26 (49.0%)	18 (34.0%)	53 (100%)
Total	65 (31.4%)	94 (45.4%)	48 (23.2%)	207 (100%)

stops during 10 min in a Word document that was opened on the computer screen. The text was presented on paper in Times New Roman 12-point font, and the students started typing in a Word document that was opened on the computer screen. After 10 min, participants were asked to stop typing, and after that, the test leader saved the file.

With this typing task, two variables were measured. First, the number of keystrokes per minute was counted while typing up an examination script of the *Dutch Alliance of Stenography and Typewriting*. This was based on guidelines of the alliance: All keystrokes, including spaces and capitals (double stroke), were counted. Second, the number of typing errors was counted. The following errors were considered typing errors: forgotten words or sentences, double spaces, and wrong spellings. They are presented in percentages by the formula (number of typing errors/total number of keystrokes) × 100.

### 2.2.2 | Spelling task

The spelling task consisted of a dictation with nine sentences; the children had to type these sentences in a new Word document that was opened on the computer screen. These sentences originated from the vocabulary exercise program of the *Centraal Instituut voor Toetsontwikkeling* (CITO; Central Institute for Test Development; Cito, Cito-toets Woordenschat, <http://www.leeustrainer.nl>). The sentences had different levels of difficulty: Three sentences were at Grade 4 level, three sentences at Grade 5 level, and three sentences at Grade 6 level. The number of words per sentence varied between five and nine, and the number of syllables per word varied between one and five. Each sentence was read aloud three times within 45 s before the next sentence was dictated, and the duration of the spelling task was approximately 8 min. Every deviation from the original spelling determined by CITO was scored as a spelling error, and the number of words with one or more spelling errors was counted.

### 2.2.3 | Narrative-writing task

Narrative writing was measured using a subtask of the Language Proficiency Test for All Children (Verhoeven & Vermeer, 2001), which is a standardized discrete-point test for the assessment of 4- to 10-year-old children consisting of 10 subtests. All of the subtests have been shown to be reliable, with Cronbach's alphas ranging between  $\alpha = 0.90$  and  $\alpha = 0.97$ . Norm scores for Dutch-speaking children were based on a nationwide sample of 727 children (Verhoeven & Vermeer, 2006).

In the narrative-writing assignment, students were asked to type a story based on a comic of eight pictures they received printed on paper. They were given 7 min to typewrite this story in a new Word document that was opened on the computer screen. It was emphasized that they had to come up with their own story but that it should be comprehensible to others who had no access to the comic pictures. The quality of this typewritten text was determined by analysing three characteristics: (a) the total number of words, (b) the quality of the picture description, and (c) temporal and causal relations. The total number of words was counted to assess the length of the text. To analyse the quality of the descriptions of the comic pictures, a protocol was followed. First, the core actions in each picture (e.g., *man is walking*

and *girl is eating ice cream*) were counted. This resulted in a score between 0 and 8. On top of that, a maximum of 3 points was given when extra information was provided, such as information on feelings of the subjects (e.g., "sad" or "happy"), relationships between the subjects (e.g., "boy friend"), or person description (e.g., "the ice-cream seller was from Italy"). One point was given when extra information was provided once, 2 points when it was provided twice, and 3 points when extra information was provided three times or more. Thus, for the eight pictures, the total possible score ranged from zero to (8 + 3 =) 11 points. Finally, temporal and causal relations in the text were scored by the number of function words that were used by the students, for example, *so*, *because*, *but*, and *why*. Every time the function word was used by the student, 1 point was scored, except for the function words *and* and *then*. When one of these two words was used, a maximum score of 1 point was given even when they were used more than once.

Two researchers scored all narrative writing assignments of both the pretest and posttest independently in order to account for interpretation effects. Due to the extensive protocol, only in few cases (less than 2%), differences in scores were observed. In these few cases, the researchers deliberated until they reached agreement on the final score.

## 2.3 | Procedure

Students were only included in the present study when parents provided active written informed consent. The experimental group consisted of students whose parents admitted to take part in a touch-typing course at an educational institute and paid for the course. The control group consisted of classmates who did not take part in any touch-typing course. Reasons for not taking part are unknown.

All tasks were completed in Microsoft Word without using the spelling and grammar check or the autocorrect function. First, all students were assessed with the typing task. They were given 10 min to type a text that was presented on paper. Subsequently, the participants were assessed with the spelling task. Last, they completed the narrative-writing task. All participants (e.g., of the experimental and the control group) were assigned with the three tasks at pretest and the posttest. Assessment of the pretest took place at the beginning of the school year in August 2013. Subsequently, the touch-typing course as intervention started for the experimental group and lasted 7 months. Finally, in April 2014, assessment of the posttest took place for both the experimental and the control groups with another version of the three tasks than the students had completed at the pretest.

## 2.4 | Intervention: Touch-typing course

The course was taught by a certified teacher from an educational institute. The participants in the experimental group who followed this course had 1.5-hr training sessions every 2 weeks and attended 15 training sessions in total. They were trained with both a textbook *Blindelings* [Blindly] (Van Wees-Bremers, 2008) and an online course *TypeWorld* (Instruct, 2013).

The textbook *Blindelings* was used during the training sessions. It consisted of 15 modules for typewriting and word-processing.

Students learned to touch-type the letters of the alphabet in a structured manner, starting with letters on the fixed “basic position” of the fingers, for example, the letters *f*, *d*, and *s* for the left hand and *j*, *k*, and *l* for the right hand. In each training session, two or three new letters were introduced. First, the exercises comprehended typing series of letters without meaning (i.e., *eded*). After that, small words (i.e., *drie keer eerder* [three times before]) were introduced gradually. The students systematically learned how to type all keys without looking at the keyboard. They gradually practiced these new skills in typing their own texts. In the final stage of this course, attention was paid to other typing skills, such as the use of capitals and paragraphs. Every module ended with a test. The students were supervised by the teacher who gave instruction regarding the sitting position and the position of the hand and wrist. Besides that, in the exercises that focused on learning to touch-type the letters, the teacher dictated the letters aloud and the children were stimulated to look at the computer screen only and not at their keyboard.

The children were asked to practice at home with both the textbook assignments and the exercises in the online course *TypeWorld* every day for about 20 min in total. In this online course, children explored an attractive and colourful environment with 20 isles that were “inhabited” with letters, words, and games. The teacher checked students’ progress and the quality of their homework. When students had not done their homework, their parents were contacted, and the students had to catch up with their homework. When students fell behind in typing, they attended extra training sessions in one of the intervening weeks between the training sessions.

## 2.5 | Data analysis

Because of unequal distributions of children over groups (experimental versus control) and over grades (4, 5, and 6), both group and grade levels were taken into account in the analyses. Means and standard deviations were calculated for each grade within each group and at group level. Cohen’s *d* (Cohen, 1988) for single-group pretest–posttest designs (with pooled variances) was calculated at group level according to Morris (2008) taking unequal group sizes into account. To answer the first research question, bivariate Pearson product–moment correlations (*r*) were calculated for the relationship between the typing skills and the spelling, and narrative-writing skills at pretest. To answer the second research question concerning the effect of the touch-typing intervention, analyses of covariance (ANCOVAs) were used with group (experimental vs control) and grade (4, 5, and 6) as fixed factors, posttest scores as dependent variable, and pretest scores as covariable. Partial  $\eta^2$  effect sizes were calculated for the interaction effects Group\*Grade and for the main effects of group and grade.

## 3 | RESULTS

### 3.1 | Descriptive statistics and comparisons at pretest

Before answering the research questions, descriptive statistics were calculated. Table 2 presents the mean scores and standard deviations

at the pretest and posttest for the experimental and control group disaggregated by grade level. It can be noticed that at pretest, the number of keystrokes per minute of both the experimental group ( $M = 52.85$ ,  $SD = 19.16$ ) and the control group ( $M = 62.19$ ,  $SD = 19.38$ ) was below the threshold of 100 keystrokes per minute to perform at “Junior typing level” according to the Dutch National norms of the European Computer Driver License (ECDL, 2018). However, at posttest, all students of the experimental group ( $M = 168.34$ ,  $SD = 43.10$ ) whether they were in Grade 4, 5, or 6 had reached the “Professional typing level” of these norms (e.g., between 150 and 180 keystrokes per minute), whereas all students in the control group ( $M = 75.55$ ,  $SD = 23.81$ ) still scored below the threshold of 100 keystrokes per minute (ECDL, 2018). Furthermore, effect sizes for the differences between pretest and posttest scores are presented by group in Table 3.

### 3.2 | Relation between typing and spelling, and narrative writing on the computer

The first research question concerned the relationship between students’ typing skills and their spelling, and narrative-writing skills on the computer. Note that in the typing task, children saw the text they had to type, whereas in the spelling task, they did not. In the narrative-writing task, they only saw the comic of eight pictures. Pearson correlations are presented in Table 4. It can be seen that correlations were moderate to strong (Evans, 1996). Highest correlations were found with keystrokes per minute; when the number of keystrokes per minute was higher, fewer spelling errors were made, the total number of words was larger, the quality of the description of the comic pictures was better, and more temporal and causal relations were present in the text. Less high but still significant correlations were found between percentage typing errors in the typing task on the one hand, and the number of spelling errors and the narrative-writing skills on the computer on the other hand.

### 3.3 | Effect of the touch-typing course

To determine whether improving typing skills by a touch-typing course had a positive effect on typing, spelling, and narrative-writing skills on the computer, results of ANCOVAs with pretest measures as covariable are presented in Table 5. It can be seen that four of the six interaction effects Group\*Grade were nonsignificant indicating that main effects can be interpreted. This was done for Keystroke per minute and the three narrative-writing tasks. Results showed significant main effects when pretest measures were included as covariable. This indicated that there was a significant difference between the experimental and control groups at posttest measures when pretest scores are taken into account. For two posttest measures, for example, percentage typing errors and number of spelling errors, interaction effects were significant in the ANCOVA showing that differences between grade levels were smaller in the experimental group than in the control group. Follow-up analyses were done for these two variables, for each grade separately. There were still differences between the experimental and control groups on percentage typing errors each

**TABLE 2** Means and standard deviations on pretest and posttest for the experimental ( $n = 154$ ) and control ( $n = 53$ ) groups on typing, spelling, and narrative-writing skills

	Experimental				Control			
	Pretest		Posttest		Pretest		Posttest	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Typing								
Keystrokes per minute								
All grades	52.85	(19.16)	168.34	(43.10)	62.19	(19.38)	75.55	(23.81)
Grade 4	43.88	(14.41)	165.14	(42.12)	44.89	(18.77)	59.09	(25.32)
Grade 5	55.07	(18.88)	168.81	(43.17)	64.05	(21.05)	77.20	(25.15)
Grade 6	64.67	(20.240)	173.27	(45.64)	68.17	(11.41)	81.40	(17.87)
Typing errors in %								
All grades	3.27	(2.48)	0.72	(0.58)	3.45	(3.41)	2.75	(1.65)
Grade 4	3.88	(2.40)	0.61	(0.37)	6.62	(6.96)	3.80	(1.88)
Grade 5	3.33	(2.73)	0.74	(0.49)	2.94	(1.59)	2.74	(1.32)
Grade 6	1.96	(1.36)	0.87	(0.95)	2.61	(1.60)	2.24	(1.80)
Spelling								
Spelling errors								
All grades	10.16	(8.98)	6.00	(3.70)	8.23	(6.32)	7.72	(6.37)
Grade 4	13.07	(8.38)	7.64	(4.11)	17.56	(8.90)	16.11	(9.60)
Grade 5	9.18	(9.87)	5.41	(3.37)	6.19	(3.72)	6.23	(4.12)
Grade 6	6.97	(6.12)	4.27	(2.23)	6.50	(2.98)	5.67	(3.25)
Narrative writing								
Total number of words								
All grades	89.64	(35.80)	150.60	(41.13)	97.11	(34.08)	116.53	(36.20)
Grade 4	78.04	(32.15)	148.44	(44.38)	78.00	(42.67)	109.11	(46.66)
Grade 5	93.38	(32.56)	155.46	(40.36)	101.08	(31.21)	115.77	(34.43)
Grade 6	106.28	(39.33)	143.57	(36.35)	100.94	(32.12)	121.33	(34.34)
Description quality								
All grades	5.69	(1.99)	8.30	(1.57)	6.34	(1.66)	6.38	(1.68)
Grade 4	5.13	(1.87)	8.04	(1.21)	5.11	(1.54)	5.33	(1.80)
Grade 5	5.85	(1.86)	8.27	(1.76)	6.54	(1.48)	6.54	(1.48)
Grade 6	6.40	(2.27)	8.83	(1.62)	6.67	(1.78)	6.67	(1.78)
Temporal/causal relations								
All grades	3.08	(1.95)	4.66	(3.06)	3.11	(1.96)	3.13	(1.86)
Grade 4	2.63	(1.87)	4.89	(3.68)	2.67	(1.50)	2.98	(1.42)
Grade 5	3.29	(2.12)	4.68	(2.71)	2.92	(2.08)	2.98	(2.28)
Grade 6	3.43	(1.57)	4.20	(2.54)	3.61	(1.98)	3.62	(1.88)

**TABLE 3** Cohen's  $d$  effect size for difference between pretest and posttest according to Morris (2008)

	Cohen's $d$	
	Experimental	Control
Typing		
Keystrokes per minute	3.51	1.29
Typing errors in %	-1.02	-0.23
Spelling		
Spelling errors	-0.65	-0.14
Narrative writing		
Total number of words	1.38	0.68
Description quality	1.22	0.14
Temporal/causal relations	0.50	0.07

**TABLE 4** Pearson correlations among typing, spelling, and narrative-writing skills for all participants ( $N = 207$ ) at pretest

	Typing task	
	Keystrokes per minute	Typing errors in %
Spelling task		
Spelling errors	-0.65**	0.63**
Narrative-writing task		
Total number of words	0.72**	-0.20**
Description quality	0.64**	-0.22**
Temporal/causal relations	0.41**	-0.14*

\* $p < 0.05$ .\*\* $p < 0.01$ .

**TABLE 5** Analysis of covariance outcomes with pretest measures as covariable, group (experimental versus control) and grade (4, 5, and 6) as fixed factors, and posttest measures as dependent variables

	Effect	F	df1, df2	p	Partial $\eta^2$
Typing					
Keystrokes per minute	Group*Grade	0.29	2, 200	0.750	0.003
	Group	328.64	1, 200	<0.001	0.622
	Grade	1.22	2, 200	0.298	0.012
Typing errors in %	Group*Grade	7.62	2, 200	0.001	0.071
	Group	170.62	1, 200	<0.001	0.460
	Grade	2.33	2, 200	0.100	0.023
Spelling					
Spelling errors	Group*Grade	8.56	2, 200	<0.001	0.079
	Group	34.70	1, 200	<0.001	0.148
	Grade	17.81	2, 200	<0.001	0.151
Narrative writing					
Total number of words	Group*Grade	2.25	2, 194	0.108	0.023
	Group	30.33	1, 194	<0.001	0.135
	Grade	1.04	2, 194	0.355	0.011
Description quality	Group*Grade	0.66	2, 198	0.514	0.007
	Group	86.30	1, 198	<0.001	0.304
	Grade	1.37	2, 198	0.255	0.014
Temporal/causal relations	Group*Grade	0.86	2, 198	0.424	0.009
	Group	10.99	1, 198	0.001	0.053
	Grade	0.17	2, 198	0.841	0.002

grade separately, with all  $ps < 0.05$ . On the number of spelling errors, these differences between groups were only significant in Grades 4 and 6 with  $ps < 0.05$ , but not in Grade 5,  $p = 0.08$ . In sum, because the experimental group had followed the touch-typing course and the control group had not, it can be concluded that the touch-typing course had an effect not only on typing skills but also on spelling and narrative-writing skills.

## 4 | DISCUSSION

The aim of the present study was to investigate the effect of a touch-typing intervention on typing, spelling, and narrative-writing skills in elementary school students. The experimental group received a complete professional touch-typing course, and the control group did not receive this course. It can be concluded that typing skills (e.g., number of keystrokes) are positively correlated with students' spelling and narrative-writing skills on the computer. These results are in line with studies that found relations between typing skills and spelling (Masterson & Apel, 2006; Ouellette & Tims, 2014) and between typing skills and narrative writing (Alves et al., 2008; Goldberg et al., 2003).

Furthermore, the improvement in typing skills in the experimental group was larger than in the control group. The experimental group outperformed the control group at posttest and accomplished to type at a level that is higher than required for a "Professional typing level" (ECDL, 2018). Thus, it can be concluded that the touch-typing course in the present study was effective in training

the students in Grades 4 to 6 to gain a professional touch-typing level. This is in accordance with previous research (Christensen, 2004; Freeman et al., 2005; Rogers & Case-Smith, 2002; Stevenson & Just, 2014). An important question is, however, whether similar progress in touch-typing skills can be gained in younger students, because it has been found that elementary teachers' belief that the ideal time would be between Grades 1 and 4 (Poole & Preciado, 2016). Only one study has investigated this in Grade 2 students and reported progress on "written communication skills" (Chwirka et al., 2002). Results of the present study showed a decline in performance (e.g., slower, more errors, and less quality of narrative-writing text) from Grades 6 to 4, and therefore, it is likely that children in grades lower than 4 will show even less performance, but the question remains to what extent their progress in typing, spelling, and narrative-writing skills on the computer will be improved by a touch-typing course.

The improved typing skills also had a positive effect on spelling ability. The decline in spelling errors on the spelling dictation task was larger in the experimental group than in the control group. This can be explained by Berninger and Winn (2006) in which the ability to spell correctly is seen as a low-level transcription skill that is relying on working-memory resources during the process of typing or writing a text. It could be argued that when typing is automatized, the demand on working-memory resources is reduced and the cognitive load is lower, which could result in better attention to spelling rules (Connelly et al., 2007; Johansson et al., 2010; Ouellette & Tims, 2014). However, it is important to notice that all children (in both the experimental and the control groups) were instructed to pay

attention to spelling rules while typing the text. It is likely that more spelling errors will occur when this is not the case. However, it is unknown how this will affect the differences in spelling errors between the two groups.

Last, improving the students' typing skills positively influenced the students' narrative-writing skills. Students in the experimental group showed a larger improvement than those in the control group on the quality of the typewritten narratives, for example, on the length of the text, the description of the comic pictures, and the use of temporal and causal relations in the text. These results are in line with Christensen (2004) who also found that children who followed a typing-skill program improved more than control children did on the quality of a typewritten text. This improvement was seen on several measures, and some of them are comparable with the ones that were used in our study, for example, "logical organization and structuring of ideas" and "comprehensiveness and elaboration of ideas in relation to the topic." Furthermore, the typing-skill program in Christensen (2004) was partly comparable with the touch-type training used in the present study in such a way that progression through the program was criterion based, indicating that children were stimulated to practice sufficiently to be able to go to the next level in the program. However, it is unknown which typing method was taught in Christensen's (2004), that is, the touch-typing, the visually guided typing strategy, or another method.

Overall, it can be concluded that a touch-typing intervention as executed in our study can result not only in better touch-typing skills but also in less spelling errors and a better text quality in a narrative-writing task on the computer. Important aspects of the touch-typing training in the present study are worth noticing: It was teacher directed, it contained 15 training sessions of 1.5 hr each and 20 min of practice every day, and there was the opportunity for students to attend extra training sessions when falling behind. Freeman et al. (2005) also reported on the basis of a review of the literature that a total of 25 to 30 hr of appropriate instruction and opportunities for ongoing practice are critical elements. It is questionable whether the effect of this course would have been the same when the students had not been stimulated and motivated to practice at home and when no extra lessons were given to students who fell behind. We think it is worth investigating whether an intervention that meets these criteria can become an evidence-based intervention to improve not only typing skills but also spelling and narrative-writing skills on the computer.

#### 4.1 | Limitations and future research

Despite the positive results found in our study, a few limitations should be noted and taken into account in future research. First, it may be that the students in the experimental group were trained not only in touch-typing but also in language-related skills. This assumption is based on the fact that the intensive training of several months contained a variety of word games on the computer and exercises in typing all sorts of texts. This may have influenced their language development positively. Furthermore, research has indicated that in regular Dutch classroom situations, little attention is paid to narrative writing (Van

Gelderen, 2010). It is possible that children in the control group only had a narrative-writing assignment once or twice a month. Attending the typing course, therefore, may have improved not only the students' typing skills but also their language skills. In future research, the activities of the control group should also be monitored closely. Furthermore, the influence of specific parts of the intervention could be investigated by conducting experiments in which specific elements of the intervention are manipulated and children are matched on relevant skills.

Second, the supposed mechanism that better touch-typing decreases the cognitive load on the working-memory resources was not tested in the present study. It was only used as a hypothetical explanation. We reasoned that mechanisms that are important during the multidimensional process of learning to handwrite (Berninger & Winn, 2006) could also be applied to the process of learning to write by touch-typing. However, this hypothesis still needs to be tested in both adults and children. For example, research focusing on the cognitive processes underlying text production, such as planning, verbalizing, and revising, is needed (Van Waes, Leijten, & Quinlan, 2010). At the same time, the role of executive functions like working memory, short-term memory, inhibition, and attention is important to consider in detail. A promising and useful technique might be keystroke logging. The main rationale behind keystroke logging is that writing fluency and flow reveal traces of the underlying cognitive processes (Leijten & Van Waes, 2013). Keystroke logging programs record the typing behaviour of the writer, allowing the researcher to replay and analyse the dynamics of the writing process, such as transcription fluency, pausing, and revisions (Van Koss Torkildsen et al., 2016). This technique can be used in research on creative writing, spelling, and the first and second language writing in children with and without writing or learning difficulties. Furthermore, this technique can be combined with eye-tracking devices enabling researchers to characterize reading activities during the writing and typing process by providing information on, for example, pausing and revision behaviour, to make well-founded inferences about the role of executive functions (Leijten & Van Waes, 2013).

Third, the design of the present study could be improved by considering bias in sample selection and tasks. For instance, tasks were not counterbalanced, and therefore, pretest and posttest measures may not have been comparable in terms of difficulty. Also, even though there was a strict protocol to evaluate the narrative-writing task and consensus between raters was large, no interrater reliability was measured. Furthermore, the task that we used for narrative-writing skill on the computer focused on rather specific characteristics of the text (e.g., number of words, description quality, and temporal/causal relations). It is unknown to what extent this task is extrapolatable to other tasks, also given the finding of Beers and Nagy (2009) that the relationships between syntactic complexity and text quality were found to be dependent both on the genre of the text and on the measure of syntactic complexity used. Another limitation concerns the recruitment of participants; all parents were asked whether their child was allowed to follow the touch-typing course. Some parents refused, and their children were placed in the control group. However, the reasons for these refusals are unknown. Because parents had to pay for the course, financial reasons are likely, and this could imply that control students have a less

fortunate economic background. On the other hand, it is also possible that the parents who did not give permission, thought that their children already had sufficient typing skills. To overcome this problem, a longitudinal multiple baseline across individuals design is needed. In this design, two experimental groups receive intervention at different time points. This manipulation is considered to be a viable and ethical alternative to the withdrawal of treatment approach that was used in the present study. Finally, little was known about possible diagnoses like dyslexia and attention deficit hyperactivity disorder. Therefore, in future research, factors such as economic background, language skills, reading level, and (learning) disorders should be controlled.

## 4.2 | Practical implications

Elementary school students increasingly do their learning and testing assignments on the computer. If children are not able to touch-type while carrying out those tasks, the computer may be more of a hindrance than an effective tool (Connelly et al., 2007). In the present study, students' typing skills are related to their spelling and narrative-writing skills. Learning how to touch-type requires a major time investment for this skill to be automatized. However, based on the results of the present study, this appears to be worth the effort because it can also improve spelling and narrative-writing skills proficiency on the computer. Moreover, it appears to be justified to pay more attention to the development of typing skills in elementary education.

The results of this study cannot simply be generalized to situations in educational practice. For example, a time limit was set during the typing tasks and the narrative-writing task in the present study, whereas in educational practice children often have less strict time restrictions for finishing a task. Furthermore, word-processing programs have spelling-check options, and when students use these options while typing, they produce better spelling but also have less practice in applying the spelling rule actively themselves.

The touch-type course in the present study can probably not be generalized to all touch-typing methods that are available nowadays. Our course was conducted at a certified educational institute that made use of intense supervision, homework schedules, and catch-up training sessions when students fell behind. This intense supervision may have played an important role in the development of automaticity in typing. In this sense, Lewis, Hearn, and Zilbert (1991) argued that typing skills could only be fully automatized by following a prolonged and intensive typing course. Their academic students took a 6-week typing course but eventually fell back into their old habit, that is, visually guided typing. However, the study of Lewis et al. (1991) was published 20 years ago, and since then, the situation in the educational school system has changed. Nowadays, implementation of digital tools in educational settings is growing, and the possibilities to practice touch-typing are ample for most children in elementary school in Western societies (Wollscheid et al., 2016). Further investigation is needed to find out what the effects of a touch-typing course are in the long run.

## ORCID

Marjolijn van Weerdenburg  <http://orcid.org/0000-0002-7655-7353>

## REFERENCES

- Alves, R., Castro, S., & Olive, T. (2008). Execution and pauses in writing narratives: Processing time, cognitive effort and typing skill. *International Journal of Psychology*, 43, 969–979. <https://doi.org/10.1080/00207590701398951>
- Beers, S. F., & Nagy, W. E. (2009). Syntactic complexity as a predictor of adolescent writing quality: Which measures? Which genre? *Reading and Writing*, 22, 185–200. <https://doi.org/10.1007/s11145-007-9107-5>
- Berninger, V., & Winn, W. D. (2006). Implications of advancements in brain research and technology for writing development, writing instruction, and educational evolution. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 96–114). New York, NY: Guilford Press.
- Christensen, C. A. (2004). Relationship between orthographic-motor integration and computer use for the production of creative and well-structured written text. *British Journal of Educational Psychology*, 74, 551–564. <https://doi.org/10.1348/0007099042376373>
- Chwirka, B., Gurney, B., & Burtner, P. (2002). Keyboarding and visual-motor skills in elementary students: A pilot study. *Occupational Therapy In Health Care*, 16(2), 39–51. [https://doi.org/10.1300/J003v16n02\\_03](https://doi.org/10.1300/J003v16n02_03)
- Cochran-Smith, M. (1991). Word processing and writing in elementary classrooms: A critical review of related literature. *Review of Educational Research*, 61, 107–155. <https://doi.org/10.3102/00346543061001107>
- Cohen, J. (1988). *Statistical power analysis for the behavioral science*. Hillsdale, NJ: Lawrence Erlbaum.
- Connelly, V., Gee, D., & Walsh, E. (2007). A comparison of keyboarded and handwritten compositions and the relation with transcription speed. *British Journal of Educational Psychology*, 77, 479–492. <https://doi.org/10.1348/000709906X116768>
- Cunningham, A., & Stanovich, K. (1990). Early spelling acquisition: Writing beats the computer. *Journal of Educational Psychology*, 82, 159–162. <https://doi.org/10.1037/0022-0663.82.1.159>
- de Graaf-Peters, V. B. (2008). Motorische ontwikkeling is een proces! De meerwaarde van dynamische theorievorming voor inzicht in motorische ontwikkeling en vroege interventie [Motorical development is a process! The surplus of dynamic theory building for motor development and early intervention]. *Stimulus*, 27, 108–120. <https://doi.org/10.1007/BF03077592>
- ECDL (2018). European computer driver license norms. Retrieved on 6th March 2018 from: <http://www.ecdl.nl/kandidaten/certificaten-en-modules/typen/typenorm>
- Evans, J. D. (1996). *Straightforward statistics for the behavioral sciences*. Pacific Grove, CA: Brooks/Cole Publishing.
- Freeman, A., Mackinnon, J., & Miller, L. (2005). Keyboarding for students with handwriting problems. *Physical & Occupational Therapy in Pediatrics*, 25, 119–147.
- Goldberg, A., Russell, M., Cook, A., & Russell, E. M. (2003). The effect of computers on student writing: A meta-analysis of studies from 1992 to 2002. *The Journal of Technology, Learning, and Assessment*, 2, 2–51. <https://doi.org/10.1057/palgrave.jlts.8400136>
- Graham, S., McKeown, D., Kihara, S., & Harris, K. R. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology*, 104, 879–896. <https://doi.org/10.1037/a00291851>
- Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology*, 99, 445–476. <https://doi.org/10.1037/0022-0663.99.3.445>
- Hayes, J. R., & Chenoweth, N. A. (2006). Is working memory involved in the transcribing and editing of texts? *Written Communication*, 23, 135–149. <https://doi.org/10.1177/0741088306286283>
- Instruct (2013). TypeWorld (retrieved at <http://www.instruct.nl>). Bodegraven, The Netherlands: Educatieve Uitgeverij Instruct.
- Johansson, R., Wengelin, Å., Johansson, V., & Holmqvist, K. (2010). Looking at the keyboard or the monitor: Relationship with text production

- processes. *Reading and Writing*, 23, 835–851. <https://doi.org/10.1007/s11145-009-9189-3>
- Leijten, M., & Van Waes, L. (2013). Keystroke logging in writing research: Using Inputlog to analyze and visualize writing processes. *Written Communication*, 30, 358–392. <https://doi.org/10.1177/0741088313491692>
- Lewis, D., Hearn, J., & Zilbert, E. (1991). Keyboarding as general education: Post-school employment and earning effects. *Economics of Education Review*, 10, 333–342. [https://doi.org/10.1016/0272-7757\(91\)90023-I](https://doi.org/10.1016/0272-7757(91)90023-I)
- Masterson, J., & Apel, K. (2006). Effect of modality on spelling words varying in linguistic demands. *Developmental Neuropsychology*, 29, 261–277. [https://doi.org/10.1207/s15326942dn2901\\_13](https://doi.org/10.1207/s15326942dn2901_13)
- Mogey, N., Sarab, G., Haywood, J., Van Heyningen, S., Dewhurst, D., Hounsell, D., & Neilson, R. (2008). The end of handwriting? Using computers in traditional essay examinations: Original article. *Journal of Computer Assisted Learning*, 24, 39–46. <https://doi.org/10.1111/j.1365-2729.2007.00243.x>
- Morphy, P., & Graham, S. (2012). Word processing programs and weaker writers/readers: A meta-analysis of research findings. *Reading and Writing*, 25, 641–678. <https://doi.org/10.1007/s11145-010-9292-5>
- Morris, S. B. (2008). Estimating effect sizes from pretest-posttest-control group designs. *Organizational Research Methods*, 11, 364–386. <https://doi.org/10.1177/1094428106291059>
- Olinghouse, N. G. (2008). Student- and instruction-level predictors of narrative writing in third-grade students. *Reading and Writing*, 21, 3–26. <https://doi.org/10.1007/s11145-007-9062-1>
- Ouellette, G., & Tims, T. (2014). The write way to spell: Printing vs typing effects on orthographic learning. *Frontiers in Psychology*, 5(FEB), 1–11. <https://doi.org/10.3389/fpsyg.2014.00117>
- Poole, D. M., & Preciado, M. K. (2016). Touch typing instruction: Elementary teachers' beliefs and practices. *Computers and Education*, 102, 1–14. <https://doi.org/10.1016/j.compedu.2016.06.008>
- Rogers, J., & Case-Smith, J. (2002). Relationship between handwriting and keyboarding performance of sixth grade students. *American Journal of Occupational Therapy*, 56(1), 34–39. <https://doi.org/10.5014/ajot.56.1.34>
- Stevenson, N. C., & Just, C. (2014). In early education, why teach handwriting before keyboarding? *Early Childhood Education Journal*, 42, 49–56. <https://doi.org/10.1007/s10643-012-0565-2>
- Van Gelderen, A. (2010). *Schrijven beschreven: Uitwerking van het referentiekader Nederlandse taal voor het schrijfonderwijs op de basisschool* [Description of "Writing": Framework of reference of Dutch for writing education in elementary school]. Enschede, The Netherlands: Nationaal Expertisecentrum Leerplanontwikkeling.
- Van Koss Torkildsen, J., Morken, F., Helland, W. A., & Helland, T. (2016). The dynamics of narrative writing in primary grade children: Writing process factors predict story quality. *Reading and Writing*, 29, 529–554. <https://doi.org/10.1007/s11145-015-9618-4>
- Van Waes, L., Leijten, M., & Quinlan, T. (2010). Reading during sentence composing and error correction: A multilevel analysis of the influences of task complexity. *Reading and Writing*, 23, 803–834. <http://doi.org/10.1007/s11145-009-9190-x>
- Van Wees-Bremers, A. (2008). *Blindelings [Blindly]*. Sliedrecht, The Netherlands: Van den Dool.
- Vaughn, S., Schumm, J., & Gordon, J. (1993). Which motoric condition is most effective for teaching spelling to students with and without learning disabilities? *Journal of the Learning Disabilities*, 26, 191–198. <https://doi.org/10.1177/002221949302600306>
- Verhoeven, L., & Vermeer, A. (2001). *Taaltoets Alle Kinderen [LPT, Language Proficiency Test for All Children]*. Arnhem, the Netherlands: Cito.
- Verhoeven, L., & Vermeer, A. (2006). *Verantwoording Taaltoets Alle Kinderen (TAK) [Justification of the Language Proficiency Test for All Children]*. Arnhem, the Netherlands: Cito.
- Williams, G. J., & Larkin, R. F. (2013). Narrative writing, reading and cognitive processes in middle childhood: What are the links? *Learning and Individual Differences*, 28, 142–150. <https://doi.org/10.1016/j.lindif.2012.08.003>
- Wollscheid, S., Sjaastad, J., Tømte, C., & Løver, N. (2016). The effect of pen and paper or tablet computer on early writing. A pilot study. *Computers and Education*, 98, 77–80. <https://doi.org/10.1016/j.compedu.2016.03.008>
- Yechiam, E., Erev, I., Yehene, V., & Gopher, D. (2003). Melioration and the transition from touch-typing to everyday use. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 45, 671–684. <https://doi.org/10.1518/hfes.45.4.671.27085>

**How to cite this article:** van Weerdenburg M, Tesselhof M, van der Meijden H. Touch-typing for better spelling and narrative-writing skills on the computer. *J Comput Assist Learn*. 2018;1–10. <https://doi.org/10.1111/jcal.12323>