


Writing in the digital age: the teaching and learning of handwriting and typing skill

Mellissa Prunty & Anna Barnett


 Collaborators: Dr Emma Sumner, Dr Ruth Nightingale, Karen Gurney

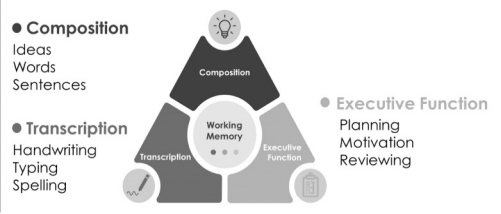
1

Outline

- Handwriting & typing as components of *writing*
- UK context – secondary school
- Project on writing in the digital age
- Interviews with Educators
- Interviews with Occupational Therapists
- Child and parent perspectives: Case studies
- Implications of findings

2

Context



Composition
 Ideas
 Words
 Sentences

Transcription
 Handwriting
 Typing
 Spelling

Executive Function
 Planning
 Motivation
 Reviewing

Working Memory

'Not-so-simple' view of writing - Berninger and Amtmann (2003)

3

English school context

Age	Year Group	Key Stage	Final Exams	State-Funded Schools	Private School
3 - 4	Nursery	Early Years		Primary	Pre-Preparatory
4 - 5	Reception				
5 - 6	Year 1	Key Stage 1			
6 - 7	Year 2			Secondary	Preparatory
7 - 8	Year 3	Key Stage 2			
8 - 9	Year 4				
9 - 10	Year 5				
10 - 11	Year 6		SATs		
11 - 12	Year 7	Key Stage 3		Sixth Form / College	Senior
12 - 13	Year 8				
13 - 14	Year 9				
14 - 15	Year 10	Key Stage 4			
15 - 16	Year 11		GCSEs		
16 - 17	Year 12	Key Stage 5	A-Levels		University
17 - 18	Year 13				
18+					

4

UK Context – What Students Need to Do?

- Students demonstrate their knowledge through writing
- National examinations require sustained handwritten work
- Students need to be able to produce fluent and legible text

But..... markers down-grade writing samples that are more effortful to read, regardless of their content (Graham et al., 2011)

5

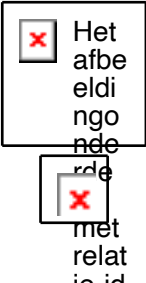
Secondary School – The Realities

- Handwriting not mentioned in National Curriculum in England (DfE, 2014)
- Many adolescents have difficulty writing at speed (Alves & Limpo, 2015)
- Handwriting difficulties more prevalent than in primary school and not specific to those with SEN (Marquardt et al., 2016)
- Linked to lower self-efficacy and avoidance of writing (Limpo & Alves, 2017)

6

Support – Which Road?

- Explicit and regular handwriting instruction -> gains in handwriting (Santangelo & Graham, 2016);
- Handwriting intervention
- Or, when difficulties are significant, accommodations may be recommended for classwork and written exams -> typing (word processor)



7

Wider Project Aims

- To review current **policies and practices** in the assessment and teaching of handwriting and typing in secondary schools, to support adolescents with handwriting difficulties
- Part of a broader project to investigate the impact of typing on writing performance in secondary school students
- Mixed methods: **interviews**, questionnaires, (student testing)
- Inclusion of key stake-holders:
 - Educators, Occupational Therapists (OTs), parents, students


8

Specific aims of the interviews


1. To understand current practice and identify support that is provided to secondary students with handwriting difficulties.
2. Educators - To identify contextual factors that influence practice and the decision to introduce typing as an alternative to handwriting.
3. Occupational Therapists - To explore how OTs support adolescents with handwriting difficulties. To understand the factors that impact on the decision to recommend typing.

9

Methodology



Semi-structured interviews (Zoom):
 (1) Identification, assessment and support of students with handwriting difficulties;
 (2) recommending typing as an alternative.



Transcripts analysed inductively using Braun and Clarke's (2006) thematic approach.

 Team met regularly to discuss theme development.

10

Outline

- UK context – secondary school
- Project on supporting students with handwriting difficulties
- **Interviews with Educators**
- Interviews with Occupational Therapists
- Child and parent perspectives: Case studies
- Implications of findings

11

Participants - educators

- N = 13 practitioners (10 SENCOs [one also assistant head], 3 specialist assessors for access arrangements)
- 7-40 years experience (majority 21-30 years)
- 6 academies, 3 independent, 1 Local Authority, 1 Pupil Referral Unit, 2 worked across schools
- London based (46%), South-East (31%), East (23%)

12

Findings - Themes

Study aims	Theme	Sub-theme
Support provided?	1. Doing the 'right' thing	<ul style="list-style-type: none"> Identifying Assessing Supporting Reviewing
Influential factors?	2. Influencing practice	<ul style="list-style-type: none"> The student The school environment The national context

13

Theme 1: Doing the 'right' thing

Identifying and assessing handwriting difficulties (mixed practice):

- When:** Proactive approach (whole class screening in Year 7), reactive. (class teachers identifying pupils as exams approach)
- How:** screening based on speed, teacher identification based on legibility

It's completely adhoc...we need to be much more strategic about identifying [handwriting difficulties] and having conversations with colleagues early on, with parents and the young person, rather than it being when we get to GCSE level, because if they're going to use a laptop they need to be doing it earlier, so they get really comfortable with it.

14

Theme 1: Doing the 'right' thing

Supporting handwriting difficulties:

- Uncertainty among practitioners – support with handwriting intervention or move to typing?
- Some reported teaching handwriting skills as part of broader interventions to address literacy difficulties; others implemented programs ('Write from the start', 'Speed up!')
- Many queried whether teaching handwriting beyond primary school was effective

By the time they get to secondary school, they have entrenched handwriting habits and to break that habit needs way more intensive support than we're able to offer

usually the only solution is a laptop

15

Theme 1: Doing the 'right' thing

Supporting handwriting difficulties - typing:

- A number of participants felt typing to be the best option

if we've spoken to primary school and they've highlighted issues with handwriting, we shift completely over to using laptops and touch typing, we don't do any work on handwriting at all

as soon as I get any feedback at all from the class teacher or a parent about any handwriting struggles, year 7 and onwards, my advice is always straight on the laptop, straightaway, the sooner we can develop those touch typing skills, the better

16

Theme 1: Doing the 'right' thing

Supporting handwriting difficulties - typing:

- Disparity in support
- Whole school touch-typing vs signposting students to programs to do at home

We encourage that across the board. But we don't necessarily have an intervention to help them get better at their typing, we just hope for the best!

17

Theme 1: Doing the 'right' thing

Reviewing:

- Recognised that typing should be monitored
- Lack of monitoring due to time pressures and the belief that most students were 'tech savvy'

The laptop is often seen as the solution...but it's not given the priority that it should be early enough, for it to be a solution. There are those students that typing doesn't work for either..

18

Theme 2: Influencing practice

Student:

- Age (Year 9 critical period for shift to typing)
- Gender (girls – handwriting intervention; boys – move to typing)
- Motivation (stigma)
- Additional needs influences decision making

The majority of students who need to use laptops, they're really disorganised. Having a laptop is an extra demand on their organisational skills. It's really hard, because you're saying, this is really useful, this will mean teachers can read your work and you might be more productive, but you're also saying, you need to come and collect a laptop, sign it out and take it to your lesson. There's so many things involved, it's a big responsibility for them.

19

Theme 2: Influencing practice

School environment:

- Provision of handwriting intervention related to their views of handwriting as a 'life skill' or a 'dying art'
- Recognised inequity when relying on class teachers to identify those with handwriting difficulties
- Finance, equipment and staff available influenced delivery of handwriting intervention, laptop provision, touch-typing programmes

Money, frankly, honestly, that's the way it is. And if you haven't got enough technology, then who trumps who? We have Key Stage 4 prioritised over Key Stage 3 because of exams

20

Theme 2: Influencing practice

National context:

- Societal values around using technology
- National curriculum
- Requirements for written examinations
- Focus of school inspections

21

Interesting observations

- Variation in practice – identification, assessment, support, reviewing
- Uncertainty around what was best practice – lack of guidelines
- Accounts were not focused on SEN
- Lack of support from Occupational Therapists

22

Outline

- UK context – secondary school
- Project on supporting students with handwriting difficulties
- Interviews with Educators
- **Interviews with Occupational Therapists**
- Child and parent perspectives: Case studies
- Implications of findings

23

Participants – Occupational Therapists

- $N = 13$ (6 National Health Service community services, 6 Independent practice, 4 school-based) – 2 worked in more than one setting
- 1-30 years experience (majority over 10 years)
- 69% South-East England

24

Findings

Study aims	Theme	Sub-theme
Support provided?	1. Shared practice	<ul style="list-style-type: none"> Practice underpinned by occupational therapy philosophy Interaction between the adolescent, handwriting and the environment
	2. Divergent practice	<ul style="list-style-type: none"> Top-down or bottom-up Remediation or compensation
Influential factors?	3. The reality of practice	<ul style="list-style-type: none"> Roles and responsibilities Resources Evidence and experience

25

Theme 1: Shared Practice

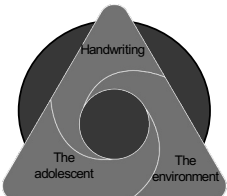
- **Underpinned by OT philosophy**
- Focus on occupations, not just handwriting
- Holistic understanding of the child's needs. Not looking at just one thing
- Understanding the child's motivation

I first have conversations with older students about how important handwriting is to them, because often in secondary school the children that are struggling with handwriting have started to disengage from learning. They are like, 'I'm not going to be practicing my handwriting for 10 minutes every day'. And it's not going to work, it's a waste of time. In those cases I don't work on handwriting, I work on developing typing skills because they are more interested in typing. They think it's more relevant for life after school.

26

Theme 1: Shared Practice

- **Interaction between the adolescent, the task and the environment**



He couldn't read it [handwriting]. The teachers couldn't read it. It frustrated him. His self-esteem was quite low, because handwriting is a big, big thing when it comes to school. It made him feel good about himself, that he was able to keep up with everybody else using the laptop.

27

Theme 2: Divergent Practice

Evidence of difference approaches used: Top-down versus bottom-up

Bottom-up

- Focus on underlying performance components (e.g. visual perception, motor coordination)
- Use of standardised assessments (e.g. Movement ABC-2)

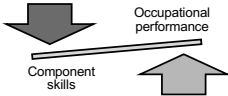
We do a lot of gross motor, weight bearing, we look outside of what's going to help the handwriting. I start with gross motor things and gradually work down to the table...I'm not one for spending lots of time on handwriting. I love those activities to free up the body. That helps when they're trying to break it down into smaller movements for handwriting

28

Findings

Top-down

- Focus on the occupation (handwriting) directly
- Use of specific assessments (e.g. DASH) and adoption of strategies (e.g. Cognitive Orientation to Daily Occupational Performance, CO-OP)
- Considered more effective for handwriting development (Hoy et al., 2011; Santangelo and Graham, 2016)



I've had really good outcomes using CO-OP for handwriting, getting them to critique their own work. 'What do you think worked? What do you think you need to do?'

29

Theme 2: Divergent practice

- **Due to uncertainty surrounding remediation versus compensation**

In the treatment sessions, they do better with their sizing and spacing because they're focusing just on that, but when they're using it functionally, it falls apart.

When you decide 'enough's enough' and transition to typing, you've often still got parents going, 'I want you to work on handwriting'... The main thing is to have the confidence to go, 'Typing is going to be the way forward'.

30

Theme 2: Divergent Practice

- BUT...

....shared recognition and emphasis on having a functional method to record schoolwork.

If they are so averse to handwriting, then why not go straight to typing because the priority is looking at what they know, showing you they understand the learning and for them to engage in the lesson.

31

Theme 3: The reality of practice

- **Roles and responsibilities influenced decision making**

In the NHS we didn't provide any interventions to address handwriting because it was beyond the scope of the amount of sessions that we had to offer a child. It was felt that it's an educational issue rather than a health issue.

The OT's role is to mediate when it goes wrong, not to teach handwriting... as soon as there are OTs who are specialists in handwriting, the assumption is that you teach the handwriting, but it's actually the teacher who needs to teach it, you're there to help with the problem.

32

Theme 3: The reality of practice

- **Resources influenced decision making..... Many described ongoing individual therapy as a 'luxury'**

For schools, there's a resource issue. They think, 'Oh my goodness, we've got to find a laptop. We've got to find time to get this kid proficient in typing'.

33

Theme 3: The reality of practice

We don't know enough about typing, because if children have motor difficulties with handwriting, why would they not have motor difficulties with typing? Is it easier to train typing than teach handwriting? We definitely need evidence about whether typing is more beneficial than handwriting, and whether starting children typing at a young age then means their handwriting deteriorates. That would help us to make more informed decisions.

Evidence and experience influenced decision making

34

Implications for practice

- Recognising the psychosocial aspect and what the adolescent's perception is of typing as an accommodation
- Training to address the knowledge – practice gap to support top down approaches
- Evidence-based guidelines to promote best practice & support early career therapists
- Closer collaboration between secondary school education staff and occupational therapists to increase an awareness of roles

35

Outline

- UK context – secondary school
- Project on supporting students with handwriting difficulties
- Interviews with Educators
- Interviews with Occupational Therapists
- **Child and parent perspectives: Case studies**
- Implications of findings

36

Case study 1: handwriting at school

- **12 year-old boy**
- Handwriting difficulties identified age 7
- 'Dyspraxia', poor letter formation
- Private handwriting tuition
- Taught to touch type in primary school
- **Enjoys:** Science
- **Really doesn't enjoy:** English/Literacy
- In class – usually handwrites
- 'Hard' to write fast enough "I can't read my own writing"

"they just kept saying 'there's a problem with the handwriting'"
 "Now he's gone up to secondary school we've got the same issues coming up again"
 "the handwriting is standing in the way of him getting his ideas out"
 "he's still going to handwriting club at secondary school because they insist on him handwriting"
 "he feels like it's a punishment"

37

Case study 1 continued.

- 'Easy' to type fast, without mistakes
- Prefers to type
- Not allowed to take computer to school, none provided, not allowed to type in exams

"and his touch typing is fast.. he's addicted to the screen and you know digital stuff so he was off and running with that"
 "he's got a classmate who's allowed to type and he kind of looks at them and thinks why are they allowed to type and I'm not"
 "he has trouble organising his thoughts, he has trouble handwriting, he has trouble doing both of those things fast"
 "I'd like to see more of a conversation, having an OT assess him will help...it's not just him being lazy"

38

Case study 2: typing at school

- **14 year-old boy**
- Handwriting difficulties identified in primary school
- Dyslexia, difficulty holding the pen, poor letter formation
- **Enjoys:** Science
- **Really doesn't enjoy:** English/literacy
- 'Hard' to write fast enough and read own writing, 'Very hard' for others to read writing
- Help with handwriting at home
- Usual way of recording: typing

"he started to type very early on, so in year 7 he had use of a laptop"
 "he just goes down to the SEN department to get the laptop for the lessons he needs. They also provide him with touch typing instruction"
 "his homework is predominantly on the laptop"
 "he can have it spell checked and he uses 'read aloud' a lot and so that's good for him too"
 "he loves it, he loves being different"
 "I would have liked to have seen him just have a sort of greater accuracy in his ability to form letter strokes"

39

Case study 3: handwriting & typing at school

- **15 year-old girl**
- Hypermobility, pain in fingers and wrists
- Slow processing
- Handwriting legible but slow and painful
- Has seen a physiotherapist and occupational therapist
- Never had handwriting or typing intervention
- **Really enjoys:** English/Literature
- **Doesn't enjoy:** Science
- Can easily type fast and without mistakes
- In class sometimes handwrites, often types

"she still handwrites class notes... she still for exams prefers to handwrite. She finds that she remembers better by handwriting"
 "We've always provided the technology for her"
 "she's just picked it up really and had a go at using it, so she's become quite proficient at typing...she doesn't touch type"
 "she can choose when to word process and when to handwrite...I think she feels very confident about it"
 "she's quite good at judging when to use which method for recording"

40

Outline

- UK context – secondary school
- Project on supporting students with handwriting difficulties
- Interviews with Educators
- Interviews with Occupational Therapists
- Child and parent perspectives: Case studies
- **Implications of findings**

41

Implications of findings

- Training for school staff – Initial Teacher Education or Continuing Professional Development?
- Support for schools to develop policies for handwriting and typing (OT input)
- Production of evidence-based guidelines to support the teaching of handwriting and typing in secondary schools
- School funding for resources, touch-typing training
- Further research on handwriting and typing for those with handwriting difficulties.

42

Future research

- **We still need to know:**
- The optimum time to introduce typing
- The impact of typing on writing performance
- How typing compares with other interventions
- How best to assess typing performance

43

Project team and funding



Dr Emma Sumner
UCL Institute of Education



Dr Ruth Nightingale
Postdoc Research Fellow
Oxford Brookes University



Karen Gurney, MSc
Research Assistant
Oxford Brookes University



**Royal College of
Occupational
Therapists**

44

Thank you for your attention

Melissa Prunty melissa.prunty@brunel.ac.uk
Anna Barnett abarnett@brookes.ac.uk

Nightingale, R., Sumner, E., Prunty, M., & Barnett, A.L. (2022). Handwriting and typing: Occupational therapy practice when supporting adolescents with handwriting difficulties. *British Journal of Occupational Therapy*. [Doi.org/10.1177/03080226221097314](https://doi.org/10.1177/03080226221097314)