

Professional learning of vocational teachers in the context of work placement

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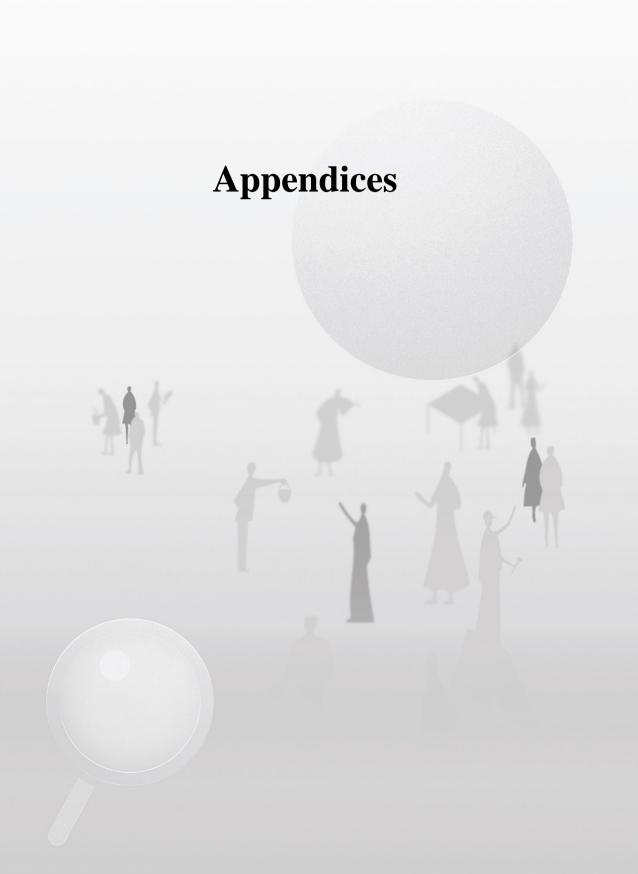
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Appendix A. Studies coded by learning activities and outcomes (Chapter 2)

		Learning activities	tivities					Lea	Learning outcomes			
	Pre-defined	Pre-defined Self-directed/	0.110100461.0	Indianter								
	professional initiated		Collaborative industry		Knowledge	Teaching	Affective	Value	Knowledge Teaching Affective Value Motivational and Institutional	Institutional	New	Student
	development activities in	activities in	acuvines ill	-Daseu	and skills	practice	outcomes c	ongruence	and skills practice outcomes congruence attitudinal beliefs outcomes	outcomes	awareness outcomes	outcomes
	programme	school	school	activities								
1.Alhanachi et al. (2021)			+		+	+		+			+	
2. Andersson et al. (2018)	+	+		+	+	+				+		
3.Andersson and Köpsén (2015)	+			+								
4.Andersson and Köpsén (2018)	+	+		+	+	+				+		
5.Andersson and Köpsén (2019)				+		+			+	+		+
6.Bound (2011)	+							+	+			
7.Bouwmans et al. (2019)	+		+									
8.Broad (2016)	+		+	+	+	+		0		+		
9.Bükki and Fehérvári (2021)			+									
10. Castaño-Muñoz et al. (2018)	+											
11.Chatigny et al. (2012)	+	+		+			+					
12.Cochrane and Narayan	-				-	-		-				
(2011)	÷				÷	÷		F				
13.Csíkos et al. (2018)	+	+	+									
14.De Jong et al. (2021)			+		+	+						

(Continued)

Pre-defined Self-directeed/			Learning activities	ivities					Lez	Learning outcomes			
Professional initiated activities in -based development activities in school activities in -based development activities in school activities programme school + + + + + + + + + + + + + + + + + +		Pre-defined	क्र	Collaborative	Industry	,	;		;			:	,
development activities in school activities programme school activities programme school activities programme school activities programme school activities activitie		professional		activities in		Knowledge	Teaching ,	Affective	Value	Motivational and Institutional	Institutional	New	Student
Programme school sold sold sold sold sold sold sold s		development		loodos		and skills	practice (outcomes c	ongruence	attitudinal beliefs	outcomes	awareness outcomes	outcomes
111)		programme	school		acuvines								
+ + + + + + + + + + + + + + + + + + +	15.de Paor (2018)	+											
1510 14 14	16.Hodes et al. (2011)	+				+	+	+	+				
+ +	17. Hoekstra and Crocker (2015)		+	+									
 + + + + + + + + + + + + + + + + + + +	18.Hoekstra and Newton (2017)	+		+	+								
+ + + + + + + + + + + + + + + + + + +	19.Hoekstra et al. (2018)	+	+	+	+	+	+					+	
<pre>+</pre>	20.Iqbal et al. (2020)	+					+						
+ + + + + + + + + + + + + + + + + + +	21.Ketelaar et al. (2014)		+	+			+		+			+	
+ + + + + + + + + + + + + + + + + + +	22.Kunst et al. (2018)	+	+	+									
+ + + + +	23.Lahiff (2015)	+											
+ + +	24.Lloyd and Payne (2012)	+	+	+	+			+					
+ +	25.Messmann et al. (2010)		+				+						
+ +	26.Oude Groote Beverborg,		-	-									
+	Sleegers, et al. (2015a)		+	+									
÷	27.Oude Groote Beverborg,		-	-									
	Sleegers, et al. (2015b)		+	+									

(Continued)

		Learning activities	tivities				Lea	Learning outcomes			
	Pre-defined Self-directed/		Collabountiers Induction	1							
	professional	initiated	Contabol ative ind	nasu y Kn	Knowledge Teaching Affective	Affective	Value	Value Motivational and Institutional	Institutional	New	Student
	development activities in	activities in	Ξ		nd skills practice	outcomes	congruence	and skills practice outcomes congruence attitudinal beliefs outcomes	outcomes	awareness outcomes	outcomes
	programme	school	school acti	activities							
28.Oude Groote Beverborg,		-									
Sleegers, Endedijk, et al. (2015)		+							ı		
29.Oude Groote Beverborg et al.											
(2020)			+						+		
30.Runhaar et al. (2010)		+	+								
31.Runhaar et al. (2014)		+	+						+		
32.Sandal (2021)	+				+		+	+	+		
33.Sandford et al. (2011)		+	+								
34.Saunders (2012)	+	+			+	+					
35.Saunders (2013)	+	+	+		+	+					
36.Schaap and De Bruijn (2018)			+		+				+		+
37.Schmidt (2019)				+							
38.Sirk et al. (2016)	+	+	+	+							
39.Smets and Struyven (2020)	+				+	+	+	+			
40.Sumaryanta et al. (2019)	+				+						

(Continued)

		Learning activities	tivities					Lear	Learning outcomes			
	Pre-defined Self-directed/	Self-directed/	Collebonotics L	1000								
	professional	initiated	Collabol ative illuustiy		nowledge	Knowledge Teaching Affective	Affective	Value	Motivational and Institutional	Institutional	New	Student
	development activities in	activities in	Ξ		and skills	practice o	outcomes co	ngruence	and skills practice outcomes congruence attitudinal beliefs	outcomes	awareness outcomes	outcomes
	programme	school	school ac	activities								
41.Tigelaar and Sins (2020)	+				0							
42. Vangrieken et al. (2016)			+							+		
43. Verberg et al. (2013)	+				+	+	+				+	+
44. Verberg et al. (2015)	+										+	
45.Virkkula and Nissilä (2014)				+	+	+			+	+		
46. Voerman et al. (2015)	+					+						
47. Warwas and Helm (2018)			+			+						
48. Watzek and Mulder (2019)			+									
49. Widmann and Mulder (2020)			+							+		
50.Wijnia et al. (2016)			+			+				+		
51. Winberg and Pallitt (2016)	+					+		+				
52. Winters et al. (2012)	+					+						
53.Zeggelaar et al. (2018)	+				0	+	+					
54.Zeggelaar et al. (2020)	+				0		+					
Totals	32	19	26	12	15	25	6	6	5	13	5	С

Appendix B: Questionnaire (Chapter 3)

Dear participants,

The aim of work placement is keeping up-to-date with your vocational knowledge and skills. In order to improve the effectiveness of work placement and study how vocational teachers' can be supported in work placement, ICLON Leiden University and CDIBB Tongji University are conducting a research project.

This questionnaire is part of the research project, which asks your perceptions of motivation and engagement toward work placement. It is expected that the questionnaire will take 10-15 minutes to complete. Your input is very valuable to us as a research team and can contribute to future work placement of vocational teachers.

Your participation in this research is voluntary and you may also withdraw consent at any time. The information provided will be used solely for the purpose of this research project. The results of the questionnaire will be treated confidential and results will always be made anonymous when reported. The data will be kept securely in Leiden University. If you have any questions or suggestions, feel free to send e-mail to this address: n.zhou@iclon.leidenuniv.nl.

1. Are you female or mal	e? ()		
A. Female	B. Male		
2. How old are you?			
3. What is the highest lev	el of formal education y	ou have completed? ()	
A. Diploma of second	ary vocational school	B. Senior college degree	
C. Bachelor	D. Master	E. Doctorate	
4. How many years of tea	aching experience do yo	u have?	
5. How many years of occ	cupational experience do	you have before becoming a te	acher?
6. What subject do you to	each?		
7. When was the last time	e you attended work plac	cement?	
8. How many days do yo	u plan to do work placei	ment in the next year?	

This part is your perception of task value and self-efficacy for work placement. Please indicate below in what extent you think it's applicable with the following items: from 1 (It's not applicable to me at all) to 7 (It's completely applicable to me).

- 1. Doing well in work placement will be important for my future career.
- 2. What I learn in work placement helps me in my teaching.
- 3. Having experience of work placement is valuable because it will help me in my future career.
- 4. I'm certain I can master the skills being presented in work placement.
- 5. The things I learn in work placement are practical for me to know.
- 6. I like work placement.
- 7. It is important to me to be someone who does well in work placement.
- 8. I believe I will learn a lot in work placement.
- 9. What I learn in work placement is so important for me.
- 10. What I am learning in work placement is exciting to me.
- 11. To succeed as a vocational teacher, work placement is necessary.
- 12. Doing well in work placement is an important part of who I am.
- 13. What I am studying in work placement fascinates me.
- 14. Experience with work placement will be useful for me later in life.
- 15. I enjoy what I am learning in work placement.
- 16. I'm confident I can do an excellent job in work placement.
- 17. I'm certain I can understand the most work content presented in work placement.
- 18. It is important to me to be a person who have experience of work placement.
- 19. I enjoy work placement.
- 20. Having experience of work placement is an important part of who I am.
- 21. Being someone who does well in work placement is important to me.
- 22. I think I will do well in work placement.

This part is your perception of cost for work placement. Please indicate below in what extent you think it's applicable with the following items: from 1 (It's not applicable to me at all) to 7 (It's completely applicable to me). (* means the items after EFA were remained for further analysis)

- 1. I have to sacrifice much to be in work placement.
- *2. Work placement is exhausting.
- 3. Work placement is much work.

- *4. Work placement demands much of my time.
- 5. I can't spend as much time doing the other things that I would like because I am doing work placement.
- *6. Work placement requires much effort.
- *7. Work placement is stressful.
- 8. Work placement requires me to give up many other activities I value.
- 9. Work placement takes much time.
- 10. Doing work placement causes me to miss out on many other things I care about.
- *11. I have to put much energy into work placement.
- *12. Work placement is frustrating.
- *13. I worry much about work placement.

This part is your perception of engagement for work placement. Please indicate below in what extent you think it's applicable with the following items: from 1 (It's not applicable to me at all) to 7 (It's completely applicable to me).

- *1. During work placement, I express my opinions.
- 2. During work placement, I ask questions.
- 3. In work placement, I try to make all the different ideas fit together and make sense of these.
- *4. In work placement, I participate in all discussions.
- *5. I try hard to do well in enterprise.
- *6. In work placement, I feel curious about what we are learning.
- *7. I pay attention in work placement.
- *8. In work placement, I try to relate what I'm learning to what I already know.
- *9. I show what I like or what I don't like during work placement.
- *10. I offer suggestions about how to make the work placement better.
- 11. Work placement is fun.
- 12. I tell my mentor what I am interested in.
- *13. When I work on something in work placement, I feel interested.
- *14. In work placement, I work as hard as I can.
- *15. In work placement, I listen to my mentor very carefully.
- *16. I enjoy learning new things in work placement.
- *17. In work placement, I try to connect what I am learning with my teaching *experiences.

*18. In work placement, I make up my own examples to help me understand the important concepts I study.

Appendix C: Interview outline (Chapter 4)

Introduction

Thank you for participating in this interview today. I'm Na Zhou, the principal investigator of this study. It's a pity that we have to conduct this interview online instead of face to face because of the COVID-19 situation. I hope you won't feel any uncomfortable. As introduced before in email/WeChat, this study focuses on vocational teachers' learning process with work placement. In this interview, I would like to know your learning experience with work placement which was just completed one week ago. This interview will last around 45 minutes. The information you provide in our interview will be treated confidential and results will be made anonymous when reported. Our talks in this interview will not affect the assessment of your performance in work placement and you are free to withdraw at any time without giving any reason and without any negative consequences. Please feel free to share your opinions and experiences as there are no correct or wrong answers.

Now, I'm going to ask your permission to record our conversation. This recording will only be used for research, and if you want to stop recording during our talk for any reason, we can pause it at any time.

Interview Questions

Firstly, I would like to know some background information about you.

- 1) What subject do you teach?
- 2) How long have you been teaching?
- 3) Do you have occupational experience before becoming a teacher?
- 4) How many times have you attended work placement?
- 5) How many days do you undertake this work placement?

Secondly, could you please talk a little about your learning experience with work placement which was just ended? For example, what did you do and what was your role? Did you attend particular learning activities? Do you still remember your first impression when you arrived at the workplace?

Thanks for your sharing, based on your experience, now I want to ask you some detailed questions.

Learning activities in work placement

- 1) Could you choose a typical day and describe what you did on that day?
- 2) Could you talk about what ways you used to learn in work placement?
- 3) What ways do you think are important to you and why?

Perceived learning goals and outcomes

- 1) What did you aim to learn before participation in work placement?
- 2) What have you learned from work placement?
- 3) In these what you have learned, which do you think is important to you?
- 4) How do you think this learning experience will influence your teaching practice?

Concluding remarks

Now, that's all my questions. Before we conclude this interview, is there something about work placement you want to share, which was not mentioned yet?

Thank you very much for your sharing. I will summarise the recording and send the text to you by email to check whether this is complete and correct. This interview will only be used for the research, will not influence your assessment in work placement and won't be shared with others except my research team members.

Appendix D: Interview outline (Chapter 5)

Introduction

Thank you for participating in this interview today. I'm Na Zhou, the principal investigator of this study. It's a pity that we have to conduct this interview online instead of face to face because of the COVID-19 situation. I hope you won't feel too uncomfortable. It has been around half a year since the last interview, in which we talked about your experience with your latest work placement. This time, we would like to know your perceptions of possible changes in your practice during the past semester. The interview will last around 45 minutes. The information you provide in our interview will be treated confidential and results will be made anonymous when reported. Our talks in this interview will not affect the assessment of your performance in work placement and you are free to withdraw at any time without giving any reason and without any negative consequences. Please feel free to share your opinions and experiences as there are no correct or wrong answers.

Now, I'm going to ask your permission to record our conversation. This recording will only be used for research, and if you want to stop recording during our talk for any reason, we can pause it at any time.

Interview Questions

- (1) Could you reflect on what you did during work placement last time and summarise what you remember of it?
- (2) Could you please introduce a little about your teaching subjects in this semester? For example, teaching goals, teaching content, and teaching environment.
- (3) Could you talk a little about your students? Such as their grades, learning characteristics, future career.

Changes in behaviors

(1) Do you think your last experience with work placement was useful for your teaching in this semester?

If response: yes

1) Could you elaborate a little why you think it was useful? Also, were there any

changes in your teaching practice due to this work placement? How do you apply what you have learned from work placement to your teaching practice in this semester?

Probes: Probes are from the 'intentions for practice' of the interviews in Chapter 4. For example: You mentioned you would like to do xxx in the last interview, did you do that in this semester?

- 2) Why do you perform these changes?
- 3) Apart from your teaching practice, is there any other change?
- 4) Based on these changes, which changes do you think important?

If response: no

1) Why do you think it not useful?

Factors influencing making changes

From your sharing, it appears that you have changed a lot/little in your teaching practice after work placement. What factors do you think facilitating or hindering your changing or applying?

Suggestion

For the future work placement, what suggestions do you have?

Concluding remarks

Now, that's all my questions. Before we conclude this interview, is there something about work placement you want to share, which was not mentioned yet?

Thank you very much for your sharing. I will summarise the recording and send the text to you by email to check whether this is complete and correct. This interview will only be used for the research, will not influence your assessment in work placement and won't be shared with others except my research team members.

Appendix E: Questionnaire (Chapter 6)

Dear participants,

The aim of work placement is keeping up-to-date with your vocational knowledge and skills. In order to improve the effectiveness of work placement, ICLON Leiden University and CDIBB Tongji University are conducting a research project.

This questionnaire is part of the research project. The questions are focused on your experiences with using what you have learnt in work placement in your school practice. It is expected that the questionnaire will take 10-15 minutes to complete. Your input is very valuable to us as a research team and can contribute to future work placement of vocational teachers.

Your participation in this research is voluntary and you may also withdraw consent at any time. The information provided will be used solely for the purpose of this research project. The results from the questionnaire will be processed anonymously and results will always be made anonymous when reported. The data will be kept securely in Leiden University. If you have any questions or suggestions, feel free to send e-mail to this address: n.zhou@iclon.leidenuniv.nl.

 Are you female or mal 	le? ()		
A. Female	B. Male			
2. How old are you?				
3. What is the highest lev	vel of form	al educatio	on you have completed? ()
A. Diploma of secondary	vocationa	ıl school	B. Senior college degree	
C. Bachelor	D	. Master	E. Doctorate	
4. How many years of tea	aching exp	erience do	you have?	
5. How many years of oc	cupational	experienc	e do you have before becomir	ıg a
teacher?				
6. What subject do you to	each?			
7. When was the last time	e you atten	ided work j	placement?	
8. How many days did yo	ou attend f	or the last t	time?	

In this section we ask you to indicate what you have learnt in the latest work placement and how you use what you have learnt in your school practice. With regards to what did you learn in your latest work placement? Please provide some

examples in your own words.		

Below, for each statement, please select the answer that best fits your experience with using what you have learnt in work placement in your school practice by using the following scale 1 (It's not applicable to me at all) to 5 (It's very applicable to me).

- 1. I adapted my teaching content based on what I learned in this work placement.
- 2. I will keep using the adapted teaching content in my teaching.
- 3. I used some resources (cases, videos, guidebooks, etc.) got from this work placement in my class.
- 4. I will keep using these resources in my class.
- 5. I provided career information to students in my classes based on this work placement.
- 6. I will keep providing career information to students in my classes based on this work placement.
- 7. I organised activities aimed at developing my students' occupational competences based on this work placement.
- 8. I will keep organising these activities.
- 9. I shared my experience of this work placement to support my colleagues in school.
- 10. I will keep sharing my experience of this work placement with my colleagues.
- 11. I used my experience with this work placement to contribute to school development, such as developing new curricula and strengthening school-company cooperation.
- 12. I will keep using my experience of this work placement to contribute to school development.

In this section, we ask you which factors influence you to keep using in your school practice what you have learnt in your latest work placement. Please indicate below to what extent you agree with the following items: 1 (Strongly disagree) to 5 (Strongly agree).

- 1. My school supervisor meets with me regularly to work on problems I may be having in trying to use in school what I learnt from this work placement.
- 2. My school supervisor meets with me to discuss ways to apply this work placement

in school.

- 3. My school supervisor helps me set realistic goals for my performance as a teacher based on this work placement.
- 4. My colleagues at school appreciate my using what I learned in this work placement.
- 5. My colleagues at school encourage me to use what I have learned in this work placement.
- 6. In my school, my colleagues expect me to use what I learned in this work placement.
- 7. I'm allowed to try out what I learned from this work placement in my school.
- 8. The resources needed to use what I learned in this work placement are available in my school.
- 9. I get opportunities to use what I learned in this work placement in my school.
- 10. The equipment, materials, tools, etc. used in work placement are very similar to those I use in my school.
- 11. What I have learned in this work placement is very similar to what I teach.
- 12. I like the way this work placement seems so much related to my school work.
- 13. I don't have enough time to try to use this work placement in my school.
- 14. Trying to use this work placement takes much energy away from my other school work.
- 15. There is too much happening at school for me to try to use this work placement.
- 16. I never doubt my ability to keep using what I transferred from this work placement in my school.
- 17. I am sure I can overcome obstacles in my work as a teacher that hinder me to keep what I transferred from this work placement.
- 18. In my teaching, I feel very confident in keeping what I transferred from this work placement in the face of difficult or taxing situations.
- 19. I found my job performance as a teacher improved because of my transfer from this work placement to my school.
- 20. When I transferred from this work placement to my school, my students, colleagues, or supervisors always showed their interest.
- 21. My transfer from this work placement to my school always produced good results.
- 22. I feel that I'm closer to being a 'dual-qualified teacher' because of my transfer from this work placement to my school.

Curriculum Vitae

Na Zhou was born on 25th January 1994, in Qingdao (China). After graduating from upper secondary education at Jiaonan No. 1 Middle School in 2012, she studied Management at East China University of Science and Technology (Shanghai, China) and obtained her bachelors' degree in 2016. Subsequently, she completed a Master degree of Management in 2019 at Tongji University (Shanghai, China). In 2019 August, Na started her PhD research at ICLON—Leiden University Graduate School of Teaching, the Netherlands. In her PhD research, Na focused on Chinese vocational teachers' professional learning in the context of work placement. At the same time, she worked as a research assistant in the Institute of Vocational and Technical Education at Tongji University.

During her PhD programme, Na attended courses in her research topic provided by the Dutch Interuniversity Centre for Educational Research (ICO). She published four chapters of the dissertation (Chapter2 to Chapter5). Chapter 6 has also been submitted for publication. She has presented her research during the following conferences: ICO International Spring School 2021, the annual meeting of the American Educational Research Association (AERA) 2022, European Conference on Educational Research (ECER) 2022.

Publications

Scientific Publications

Zhou, N., Tigelaar, D. E., & Admiraal, W. (2022). Vocational teachers' professional learning: A systematic literature review of the past decade. *Teaching and Teacher Education*, 119, 103856. https://doi.org/10.1016/j.tate.2022.103856

Zhou, N., Tigelaar, D. E., & Admiraal, W. (2022). The relationship between vocational teachers' motivational beliefs and their engagement in work placement. *Journal of Vocational Education & Training*, 1-20. https://doi.org/10.1080/13636820.2022. 2066560

Zhou, N., Tigelaar, D. E., & Admiraal, W. (2022). Factors influencing the impact of work placement on vocational teachers' school practice. *Educational Studies*, 1-20. https://doi.org/10.1080/03055698.2022.2069462

Zhou, N., Tigelaar, D. E., & Admiraal, W. (2021). Understanding vocational teachers' professional development in work placement: learning goals, activities, and outcomes. *Studies in Continuing Education*, 1-19. https://doi.org/10.1080/0158037X. 2021.1960496

Manuscripts Submitted for Publication

Zhou, N., Tigelaar, D. E., Wang, J., & Admiraal, W. (Submitted for publication) Factors predicting vocational teachers' transfer of learning: A quantitative study in the context of work placement

Presentations

Zhou, N., Tigelaar, D., & Admiraal, W. (2021, March). The relationship between vocational teachers' motivational beliefs and their engagement in work placement. Paper presented at the online ICO International Spring School (ISS), the Netherlands. Zhou, N., Tigelaar, D., & Admiraal, W. (2022, April). Understanding vocational teachers' professional development in work placement: learning goals, activities, and outcomes. Paper presented at the online annual meeting of the American Educational Research Association (AERA), the USA.

Zhou, N., Tigelaar, D., & Admiraal, W. (2022, September). Factors influencing the impact of work placement on vocational teachers' school practice. Paper presented at the European Conference on Educational Research (ECER), Yerevan.

Acknowledgements

In August 2019, I flew to the Netherlands and started my academic life as a PhD candidate. In this wonderful journey, I experienced many sweet and warm moments, such as papers being accepted, friends party, flying trips. Of course, I also got lots of tough times, in particular, the outbreak of COVID-19 ever made me at a loss of what to do in my life and work. But, no matter those good or blue days, I never felt afraid and stopped my steps because of your support, company, and love. Now, I would like to express my sincere appreciation to you!

I would first thank my promotor Professor Wilfried Admiraal, who is a knowledgeable, insightful, and modest researcher, as well as the best tour guide of my research journey. During the past three and half years, we had communications through more than sixty meetings and countless emails. Every discussion, your insights always enlighten and benefit me a lot. I also learned from you how to face and settle any difficulties in research with a positive attitude. In addition, you are also a person who is passionate for life. I enjoy reading 'wekelijks berichtje' written by you (although it's Dutch, I always translate it into English), in which you often share your dogs, trips, and much other interesting stuff. This also inspires me to think about how to pursue a good balance of my work and life in the future.

I would further thank Dr Dineke Tigelaar, who is not only my supervisor but also my lovely friend. In this research journey, you were always patient and careful with any of my questions, even if some of them might be a little silly. And you provided me with a lot of valuable comments and suggestions, which of course improved the quality of my work. I learn from you about what a responsible and thoughtful supervisor should be like, which will be helpful for me if I have an opportunity to supervise others in my future career. You also enriched my life in the Netherlands, such as you gave me a sightseeing tour of your living town. The pictures we dressed in Cheese lady clothes together was one of my favourite pictures in the Netherlands.

Thanks to all ICLON colleagues. I cherish the memory of every happy hour, every research group meeting, and every small talk in the office or in the hallway. You

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