

16. How can Lesson Study Model be used in special education?¹

Ahmet AYKAN²

APA: Aykan, A. (2022). How can Lesson Study Model be used in special education?. *RumeliDE Dil ve Edebiyat Araştırmaları Dergisi*, (29), 241-251. DOI: 10.29000/rumelide.1164863.

Abstract

This study was conducted to determine how the professional development model of lesson study would function in special education. The study was designed as a case study, which is one of the qualitative research methods, and it was carried out with 10 special education teachers selected by criterion sampling. Data were collected through observation reports and semi-structured interview forms from special education teachers who learned and applied the lesson study model for the first time in a 6-week period. The data obtained were analyzed by content analysis and presented in tables. The study found that special education teachers receive professional development from social media, experts, experienced colleagues, trainings, and books. It was determined that special education teachers have achieved some pedagogical, student, and teacher-based positive gains thanks to the lesson study. In addition, special education teachers also mentioned some negativities such as worry, anxiety, time, and cost about the lesson study. The present study revealed that the lesson study model was represented by a small number of studies conducted within the scope of special education. In this context, it was suggested that the lesson study model, which could contribute to the professional development of special education teachers and the success of special education students, should be included in more studies in special education.

Keywords: Lesson study model, special education, teacher professional development, case study

Ders Araştırması Modeli özel eğitimde nasıl kullanılabilir?

Öz

Bu çalışma ders araştırması mesleki gelişim modelinin özel eğitimde nasıl bir işleve sahip olacağını belirlemek amacıyla yapılmıştır. Nitel araştırma yöntemlerinden durum çalışması ile desenlenen çalışma, ölçüt örnekleme yöntemi ile belirlenen 10 özel eğitim öğretmeni ile yürütülmüştür. 6 haftalık bir süreçte ders araştırması modelini ilk defa öğrenen ve uygulayan özel eğitim öğretmenlerinden gözlem raporları ve yarı yapılandırılmış görüşme formlarıyla veriler toplanmıştır. Elde edilen veriler içerik analizi ile analiz edilerek, okuyucuların kolay anlayabileceği şekilde tablolarla sunulmuştur. Özel eğitim öğretmenlerinin mesleki gelişimlerini; sosyal medya, uzmanlar, deneyimli meslektaşlar, eğitimler ve kitaplardan sağlamaya çalıştıkları anlaşılmıştır. ders araştırması ile birlikte özel eğitim öğretmenlerinin; pedagojik temelli, öğrenci temelli, öğretmen temelli bir takım olumlu kazanımlar elde ettikleri tespit edilmiştir. Ayrıca özel eğitim öğretmenlerinin ders araştırması ile ilgili endişe, kaygı, zaman ve maliyet gibi bir takım olumsuzluklardan da bahsettikleri sonucu elde edilmiştir. Araştırma sonucunda ders araştırması modelinin özel eğitim bünyesinde yapılan az sayıdaki çalışma ile temsil edildiği anlaşılmıştır. Bu kapsamda özel eğitim öğretmenlerinin mesleki gelişimlerine ve

¹ Bu çalışmada veriler 2019 yılından önce toplandığı için etik kurul bilgilerine ihtiyaç duyulmamıştır.

² Dr. Öğr. Üyesi, Muş Alparslan Üniversitesi, Eğitim Fakültesi, Eğitim Bilimleri Bölümü, Eğitim Programları ve Öğretimi ABD (Muş, Türkiye), a.aykan@alparslan.edu.tr, ORCID ID: 0000-0002-8033-0821 [Araştırma makalesi, Makale kayıt tarihi: 21.06.2022-kabul tarihi: 20.08.2022; DOI: 10.29000/rumelide.1164863]

özel eğitim öğrencilerinin başarılarına katkı sağlayabilecek olan ders araştırması modelinin özel eğitimde daha fazla çalışmada yer alması gerektiği önerilmiştir.

Anahtar kelimeler: Ders araştırması modeli, özel eğitim, öğretmen mesleki gelişimi, durum çalışması

1. Introduction

Lesson study includes the work of a group of teachers working collaboratively and sharing their professional knowledge, experience, and skills with each other (Fujii 2014). The teachers, who come together in the first stage of the model, collaboratively create a lesson plan in line with different opinions and suggestions. This lesson plan is implemented in the classroom by one teacher in the group, while other teachers observe the lesson and take observational notes. At the end of the lesson, all the teachers come together again and discuss the lesson based on the observations and prepare the lesson plan again. This improved lesson plan is reapplied in the classroom by a different teacher in the group. If necessary, this cyclical process can be repeated once or twice (Aykan & Dursun, 2021).

The cyclical process of the lesson study model offers many opportunities to the teachers involved in this process. Teachers become more qualified teachers by making the professional development with their other colleagues continuous (Baricau Gutierrez, 2016). Teachers who work with other colleagues gain the ability to create a more qualified lesson plan. Again, by making observations during the lesson, they have the opportunity to see a lesson process from the perspective of the student. Therefore, teachers realize how students' learning can be improved by having the opportunity to see which pedagogical practices work or not (Dudley, 2012).

Studies on the lesson study continue to increase every day (Yeşilçınar & Aykan, 2022). However, there are limited number of studies on the application of the lesson study model in special education (Holmqvist, 2020; Klefbeck, 2021; Norwich & Ylonen, 2013; Ylonen & Norwich, 2012). In particular, it is significant for special education teachers to be better equipped professionally and to constantly exchange information with other colleagues to cope with difficulties they face. Lesson study, in this sense, both sustains the professional development of special education teachers and offers them the opportunity to share their knowledge and experience with other colleagues. The model, which allows teachers to monitor the pedagogical practices of special education teachers who are more experienced and equipped in the professional sense, also provides an environment for observing how students react to these practices.

The lesson study model was used by Ylonen & Norwich (2012) to improve the pedagogical practices of teachers who teach students with moderate learning difficulties. The researchers indicated that the participants of the study gained new insights and visions. A lesson study-based study was conducted by the same researchers the following year with students with moderate learning difficulties and their teachers. As a result of this study, it was stated that the lesson study model provided some improvements in the pedagogical practices of special education teachers and in the learning of students (Norwich & Ylonen, 2013). Holmqvist (2020) used the lesson study model to improve the teaching skills of special education teachers in his study. Emphasizing that more work should be done with the lesson study model both for in-service and pre-service special education teachers, the model improved the teaching skills of special education teachers. In addition, the lesson study model was used by Klefbeck (2021) as a different way for the education of students with special learning difficulties. The study focused on the

changes in the professional practices of the teachers involved in the lesson study process and the effects of these changes on the students.

Review of the literature reveals that the lesson study model has just started gaining popularity for the professional development of special education teachers. The changes in the practices of special education teachers who learn and apply the lesson study model are discussed. On this basis, the present study aimed to investigate following research questions:

- What are the special education teachers' means of getting professional development?
- What is the function of the lesson study model in special education?

In this vein, the present study aims to contribute to the gap in literature and to see how the model provides opportunities for special education teachers.

2. Methodology

The present research was designed as a qualitative case study. In many studies conducted within the scope of the lesson study model, qualitative methods are generally preferred (Aykan & Kincal, 2016). The reason for this may be the effort to obtain realistic thoughts of the participants regarding the application. Case study, on the other hand, is expressed as a more detailed handling of information about an event or situation with data collection tools such as observation, interview, or document analysis in a natural environment (Merriam, 2009; Yin, 2011).

2.1. Research process



Figure 1. Research Process

No	Duration	Implementation
1. week	45 m	Presenting the lesson study model
2. week	40 m	Watching videos of lesson study applications
3. week	60 m	Piloting of the lesson study model
4. week	20 m	Creating lesson plans in cooperation in 2 separate groups (each group consists of 5 people)
	30 m	Applying the lesson plan of each group to the students, taking notes during the application
	30 m	Sharing the notes, opinions and suggestions about the applied course
	30 m	Sharing the notes, opinions and suggestions about the applied course
	30 m	Re-application of prepared lesson plans
5. week	150 m	Re-implementation of the Lesson study cyclical system
6. week	150 m	Re-implementation of the Lesson study cyclical system

Table 1. The Implementation Process of the Lesson Study Model

Adres
RumeliDE Dil ve Edebiyat Araştırmaları Dergisi
Osmanağa Mahallesi, Mürver Çiçeği Sokak, No:14/8
Kadıköy - İSTANBUL / TÜRKİYE 34714
e-posta: editor@rumelide.com
tel: +90 505 7958124, +90 216 773 0 616

Address
RumeliDE Journal of Language and Literature Studies
Osmanağa Mahallesi, Mürver Çiçeği Sokak, No:14/8
Kadıköy - ISTANBUL / TURKEY 34714
e-mail: editor@rumelide.com,
phone: +90 505 7958124, +90 216 773 0 616

2.2. Participants

The participants of the study consist of 10 special education teachers determined by the criterion sampling method, which is within the scope of the purposive sampling method. The purpose of choosing the purposive sampling method is to determine more deeply what the model does for special education teachers who learn and apply the lesson study model. Participation of special education teachers in the study voluntarily and participation in informative meetings about lesson study were determined as criteria. In this context, the special education teachers working in the special education institutions were interviewed at the beginning and the teachers were informed about the study. As a result of the information, 12 special education teachers volunteered to participate in the study. During this process, two special education teachers left the study and the study continued with 10 teachers. Each participant was shown with codes such as T1, T2, T3....

2.3. Data collection

Many different data collection tools can be used in case studies within the scope of qualitative research. In particular, the use of more than one data collection tool is considered very important in terms of the validity and reliability of the study (Creswell, 2007; Yin, 2011). In this context, semi-structured interview form and observation form were used in the present study. While preparing the semi-structured interview questions, the studies on lesson study in the literature were examined and questions were formed. The questions formed were finalized in line with the opinions and suggestions of three instructors, a program development specialist, an assessment-evaluation specialist, and a language specialist. The other data collection tool is the observation form created by Aykan (2019) within the scope of his doctoral thesis, and this form was used within the scope of the study by obtaining the necessary permissions.

2.4. Data analysis

The data obtained from the semi-structured interview forms and observation forms used within the scope of the research were analyzed by content analysis technique. While conducting content analysis, first the codes and then the themes were reached with an inductive method. First of all, interviews lasting approximately ten minutes were administered to each participant separately and the interviews were recorded. The recorded interviews were transcribed without any intervention. Then, the obtained data were coded by two different experts, and the codes were then compared. Different encodings were discussed, and a common decision was reached. After the codes were determined, similar codes were brought together, themes were created with a sense of integrity and expressed in a way that readers could easily understand.

3. Findings

The data obtained from participating special education teachers were analyzed and given in this section. First of all, findings regarding the participants' responses to the question "What do you do to ensure your professional development?" were shown in Table 2 in detail.

Theme	Code	Sample Statements
Social Media	Instagram	<i>I follow few special education people on Instagram (T3)</i>
	Youtube	<i>Some of the special education experts have YouTube channels. I follow them. (T10)</i>
		<i>I learn new things from social media. (T7)</i>
Experts	Lecturers	<i>I contact highly distinguished scholars who work at the university where I got my BA degree. I ask them (T9)</i>
Colleagues	Experienced teachers	<i>Highly experienced teachers with whom I work together contribute a lot to me (T8)</i>
Trainings	In-service trainings	<i>I participated in a professional development seminar once in Antalya (T4)</i>
	Seminars	<i>Some seminars are organized within the public education center and I try to attend them. (T1)</i>
Books	Field-related books	<i>I follow books specific to my field. I learn a lot from them too. (T5)</i>

Table 2. Special education teachers' means of receiving professional development

Table 2 shows that special education teachers use social media platforms such as Instagram and YouTube to ensure their professional development. The teachers who received support from their professors who used to teach them stated that they also received help from their experienced colleagues at the same workplace. Teachers, who emphasized that they received their professional development through various trainings, participated in in-service training activities and various seminars in this context. In addition, the data show that some teachers read field-specific books to ensure their professional development. All in all, the data show that special education teachers did not talk about any specific professional development model.

Secondly, the participating special education teachers' responses to the question "How can lesson study be used in special education?" and findings obtained from observation reports are shown in Table 3 in detail.

Theme	Code	Sample Statements
	Self-evaluation	<i>I had the opportunity to review the strategies I used in my own teaching activities. (T4)</i> <i>During the observation process, I questioned myself about what I should do and how. (T5)</i>

Pedagogy-based Reflections	Learning Styles	<i>I knew that students have different learning styles, but I got ideas about how I should put it into practice. (T7)</i>
	Teaching Methods	<i>Some of my friends talked about different teaching applications such as videos, movies, music. (T1) Some methods actually work. (T6)</i>
	Planning the Lesson	<i>I knew how to plan the lesson, but I saw how it could be planned better. So, I can say that my awareness on this issue has increased. (T3)</i>
Student-based Reflections	Individual Differences	<i>In our field, an individualized education and training program is applied to each student. While applying the model, we discussed what can be done with different students. (T10)</i>
	Different Practices	<i>In fact, I realized that it might be better to use different materials or support materials, as opposed to my traditional practices such as repetition. (T8) I saw that I could contribute to the better learning of students with the different experiences we gained, namely games and assistive technologies. (T1)</i>
Teacher-based Reflections	Belief	<i>It is a useful model. I think my colleagues and I can achieve this. (T7)</i>
	Perspective	<i>Hearing new and different ideas contributed a lot to me, at least it made my perspective more different. (T3)</i>
	Social interaction	<i>Frankly, I have never interacted so closely with my colleagues. I think it was good. (T5)</i>
	Burnout	<i>I have been working for many years so it seems difficult for me to implement new things after this time. But it will be useful for young teachers. (T2)</i>
	Risk	<i>Lesson study shows us how the risks we don't take in classes during normal times can turn out. (T10)</i>
	Self-confidence	<i>I realized that applications that I thought I could not do because I did not trust myself could actually be done. (T6)</i>
	Doubt	<i>It is a very new application in special education. I don't know if we can apply this in normal times (T9)</i>
	Anxiety	<i>Working in collaboration with my colleagues in the same environment is nice, but I don't think every special education teacher wants to do this. (T6)</i>

Negative Reflections	Time	<i>Our students are already special students, so we spend a lot of time with them. If we try to apply this model, we will have problems in terms of time (T10)</i>
	Financial	<i>Lesson study is good, but we have to work extra. Teachers must be paid for this. (T2)</i>

Table 3. Reflections of the lesson study model in special education

Table 3 shows that the lesson study model has a different set of reflections on special education teachers. It is understood from the views of the teachers that the model has pedagogical, student-based, and teacher-based positive reflections as well as some negative reflections. Thanks to the model, teachers have the opportunity to self-evaluate professionally, learn how to make applications according to different learning styles, understand which method and technique works and how well, and their awareness within the scope of lesson planning has increased. The participating teachers, who stated that they had discussions about the individual differences of the students, emphasized that different materials and practices could be more beneficial than traditional practices. The participants who stated that they interacted with their colleagues, started to take risks, and explored different ideas and suggestions thanks to the lesson study, were confident in applying the model. In addition, the views of some teachers reveal that they have some negative ideas about the model such as cost, time, worry and anxiety.

4. Conclusion and discussion

Lesson study model continues to be a preferred model with its increasing use day by day in order to ensure the professional development of teachers and teacher candidates. Literature review revealed that despite this widespread use of the model, a very limited number of studies have been carried out within the scope of special education. The idea of how the lesson study model will be reflected in special education and how the model can function in special education has formed the basis of the emergence of this study. In this context, the lesson study model was introduced to ten special education teachers and the model was applied by the teachers. During and after the implementation process, data were obtained from special education teachers and these data were discussed on the basis of the literature.

Some of the participating special education teachers benefit from social media to ensure their professional development. Teachers, who follow various special education experts in social media platforms such as YouTube and Instagram, try to find solutions to the problems they encounter during the teaching process by watching the videos or posts of the experts. Similarly, some other special education teachers tried to complete their professional deficiencies by meeting face-to-face or by phone with the instructors they knew from undergraduate education. In addition, some special education teachers emphasized that they received professional help from their experienced colleagues. Moreover, group of special education teachers try to provide their professional development by participating in in-service trainings or seminars or by reading books specific to the field.

The review of the literature displayed that there are studies stating that special education teachers are not at a professional level (Bruggnick et al. 2015; Byrd & Alexander, 2020; Page & Davis, 2016). It is stated that one of the ways to ensure the pedagogical and field-based professional development of special education teachers is to cooperate with experts (Byrd & Alexander, 2020; Sharma & Sokal, 2015). None of the special education teachers included in the study had heard of the lesson study model. In this context, it is thought that the collaborative environment offered by the lesson study model would make

significant contributions to special education teachers in terms of professional development. The study was conducted with the thought that experienced instructors, special education specialists, and special education teachers, who will take part in the cyclical process of the Lesson Study, will share their professional knowledge and experience with each other in interaction, and will offer them a very useful professional development environment.

The present study revealed that the special education teachers who learned and applied the lesson study model reflected some pedagogical-based gains. In support of the research results, there are studies in the literature that show that the lesson study model contributes to the pedagogical content knowledge of special education teachers (Leifler, 2020; Norwich & Ylonen, 2013; Yoshida, 2012). Ylonen & Norwich (2012) concluded in their study that a high-quality and effective lesson study model improves special education teachers' pedagogical content knowledge. Some special education teachers stated that they had the opportunity to make a professional self-evaluation with the lesson study model. Emphasizing that they reviewed the strategies they used in the teaching process, the teachers stated that they had an idea about what to do and how while making observations. Teachers, who learned different teaching methods and understood what these methods do in practice, stated that their awareness of how they can plan the teaching process better has increased.

The present study revealed that special education teachers who learn and apply the lesson study model reported that they had some student-based gains. The participating teachers argued that every student in special education needs an individualized education and training program, and the lesson study model supports this understanding. The participating teachers indicated that the discussion environment comes with the model allowed them to analyze individual differences of the students from different perspectives. The teachers, who reported that they realized the benefits of using different materials or different supportive materials on students' progress, stated that they discovered the inadequacy of traditional practices. It is seen in the literature that these findings of the present study are supported by some studies which emphasized the contribution of the lesson study model to the learning process of special education students (Holmqvist, 2020; Michael et al., 2021; Norwich et al., 2021; Norwich & Ylonen, 2013). Klefbeck (2021), in his study with special education students based on the lesson study model, concluded that the model enables students to realize their strengths rather than their shortcomings. Goei et al. (2021) indicated that the lesson study model improves the practices for special education students and encourages students to learn.

It was explored in the present study that the participating special education teachers who learned and applied the lesson study model reported some benefits at the end of the process. The teachers discovered that they learned to take risks regarding the instructional practices, which they could not do before. Demir et al. (2013), Dudley (2013), and Aykan & Yıldırım (2022) found in their studies that the lesson study model encouraged teachers to take more risks than normal times and to step out of their comfort zone. Stating that the application process of the model contributed positively to their perspectives on the teaching process, special education teachers expressed that they interacted with their colleagues that they do not normally do. The fact that special education teachers carry a risk of burnout based on working with students with special needs (Jennet et al., 2003) was also emphasized by some teachers during the application of the lesson study model.

The participating special education teachers reported some limitations about the model regarding the while and post application processes. Teachers emphasized that the lesson study model is a new approach and that not every special education teacher may want to apply this model. Special education

teachers, who stated that it would be very difficult to apply the lesson study model in the normal teaching process, questioned in which time period the cyclical process of the model could be applied. Emphasizing that they only try to implement the achievements in their own plans in the normal teaching process, the teachers stated that this model can be applied during additional lesson hours and teachers should be paid during these hours. Similar limitations regarding the lesson study have been expressed in many studies (Aykan & Yıldırım, 2022; Chen, 2017; Lampley et al., 2018).

Lesson study, the main purpose of which is to make the professional development of teachers continuous, is a professional development model used in many levels of education, starting from pre-school to undergraduate. This study aimed to contribute to the literature by showing how the model can be applied in the field of special education. The researcher obtained findings regarding how the lesson study model is reflected on the professional development of special education teachers. It was found that special education teachers acquired many new skills regarding pedagogical issues, better understanding of students and questioning their own teaching activities. The professional awareness of the teachers, who faced some difficulties while applying the model, increased during the observation process and in the evaluation meetings afterwards. Based on this study, the following recommendations can be made for future studies:

- In-service training can be provided to special education teachers on the basis of lesson study to ensure continuity in their professional development.
- Longitudinal studies can be conducted on the basis of the lesson study model with special education teachers of different specializations.
- Studies can be conducted on the effect of the lesson study model on the academic knowledge and skills of special education students (especially dyscalculic students).

5. Limitations

The present study's findings reflect the views and experiences of 10 special education teachers working in public schools in Turkey.

References

- Aykan, A., & Dursun, F. (2021). Investigating lesson study model within the scope of professional development in terms of pre-service teachers. *International Online Journal of Educational Sciences*, 13(5), 1388-1408. <https://doi.org/10.15345/iojes.2021.05.007>
- Aykan, A., & Kınca, R. Y. (2016). Ders araştırması kapsamında farklı ülkelerde yayınlanan bilimsel çalışmaların içerik analizi. *Atatürk Üniversitesi Kazım Karabekir Eğitim Fakültesi Dergisi*, (32), 19-31. Retrieved from <https://dergipark.org.tr/en/pub/ataunikkefd/issue/26879/282655>
- Aykan, A., & Yıldırım, B. (2022). The Integration of a lesson study model into distance STEM education during the covid-19 pandemic: Teachers' views and practice. *Technology, Knowledge and Learning*, 27(2), 609-637. <https://doi.org/10.1007/s10758-021-09564-9>
- Baricau Gutierrez, S. (2016). Building a classroom-based professional learning community through lesson study: insights from elementary school science teachers. *Professional Development in Education*, 42(5), 801-817. <https://doi.org/10.1080/19415257.2015.1119709>
- Bruggink, M., Goei, S. L., & Koot, H. M. (2016). Teachers' capacities to meet students' additional support needs in mainstream primary education. *Teachers and Teaching: Theory and Practices*, 22(4), 448-460. <https://doi.org/10.1080/13540602.2015.1082727>

- Byrd, D. R., & Alexander, M. (2020). Investigating special education teachers' knowledge and skills: Preparing general teacher preparation for professional development. *Journal of Pedagogical Research*, 4(2), 72-82. <https://doi.org/10.33902/JPR.2020059790>
- Chen, X. (2017), "Theorizing Chinese lesson study from a cultural perspective". *International Journal for Lesson and Learning Studies*, 6 (4), 283-292. <https://doi.org/10.1108/IJLLS-12-2016-0059>
- Creswell, W. J. (2007). *Qualitative inquiry and research design – Choosing among five approaches* (2nd ed.). London: Sage.
- Demir, K., Czerniak, C. M., & Hart, L. C. (2013). Implementing Japanese lesson study in a higher education context. *Journal of College Science Teaching*, 42(4), 22 - 27.
- Dudley, P. (2012). Lesson study development in England: from school networks to national policy. *International Journal for Lesson and Learning Studies*, 1 (1), 85-100. <https://doi.org/10.1108/20468251211179722>
- Dudley, P. (2013). Teacher learning in lesson study: what interaction-level discourse analysis revealed about how teachers utilised imagination, tacit knowledge of teaching and fresh evidence of pupils learning to develop practice knowledge and so enhance their pupils' learning. *Teaching and Teacher Education*, 34, 107-121. <https://doi.org/10.1016/j.tate.2013.04.006>
- Fujii, T. (2014). Implementing Japanese lesson study in foreign countries: misconceptions revealed. *Mathematics Teacher Education and Development*, 16(1), 65-83.
- Holmqvist, M. (2020). Lesson study as a vehicle for improving SEND teachers' teaching skills. *Journal for Lesson and Learning Studies*, 9 (3), 193-202. <https://doi.org/10.1108/IJLLS-05-2020-0022>
- Jennett, H. K., Harris, S. L., & Mesibov, G. B. (2003). Commitment to philosophy, teacher efficacy, and burnout among teachers of children with autism. *Journal of Autism and Developmental Disorders*, 33(6), 583-593. <https://doi.org/10.1023/B:JADD.0000005996.19417.57>
- Klefbeck, K. (2021), "Lesson study as a way of improving school-day navigation for pupils with severe intellectual disability and autism", *International Journal for Lesson and Learning Studies*, 10 (4), 348-361. <https://doi.org/10.1108/IJLLS-03-2021-0024>
- Lampley, S. A., Gardner, G. E., & Barlow, A. T. (2018). Exploring pedagogical content knowledge of biology graduate teaching assistants through their participation in lesson study. *Teaching in Higher Education*, 23(4), 468-487. <https://doi.org/10.1080/13562517.2017.1414786>
- Leifler, E. (2020), "Teachers' capacity to create inclusive learning environments". *International Journal for Lesson and Learning Studies*, 9 (3), 221-244. <https://doi.org/10.1108/IJLLS-01-2020-0003>
- Merriam, S. B. (2009). *Qualitative Research: A guide to design and interpretation*. San Francisco: Jossey-Bass.
- Michael, C., & Lee, C. K. E. (2021). Supporting Lesson Study in special education schools in Singapore. In *Lesson Study in Inclusive Educational Settings* (pp. 137-150). Routledge.
- Norwich, B., & Ylonen, A. (2013). Design based research to develop the teaching of pupils with moderate learning difficulties (MLD): Evaluating lesson study in terms of pupil, teacher and school outcomes. *Teaching and Teacher Education*, 34, 162-173. <https://doi.org/10.1016/j.tate.2013.04.012>
- Norwich, B., Benham-Clarke, S., & Goei, S. L. (2021). Review of research literature about the use of lesson study and lesson study-related practices relevant to the field of special needs and inclusive education. *European Journal of Special Needs Education*, 36 (3), 309-328. <https://doi.org/10.1080/08856257.2020.1755929>
- Page, A., & Davis, A. (2016). The alignment of innovative learning environments and inclusive education: How effective is the new learning environment in meeting the needs of special education learners? *New Zealand Journal of Teachers' Work*, 13(2), 81-98. <https://doi.org/10.24135/teacherswork.v13i2.79>

- Sharma, U., & Sokal, L. (2015). The impact of a teacher education course on pre-service teachers' beliefs about inclusion: An international comparison. *Journal of Research in Special Educational Needs*, 15(4), 276-284. <https://doi.org/10.1111/1471-3802.12043>
- Yeřilçınar, S., & Aykan, A. Lesson study and 21st-century skills: Pre-service Teachers Reason, Produce and Share. *Participatory Educational Research*, 9 (3), 315-329. <https://doi.org/10.17275/per.22.68.9.3>
- Yin, R. K. (2011). Applications of case study research. London: Sage.
- Ylonen, A., & Norwich, B. (2012). Using lesson study to develop teaching approaches for secondary school pupils with moderate learning difficulties: Teachers' concepts, attitudes and pedagogic strategies. *European Journal of Special Needs Education*, 27 (3), 301-317. <https://doi.org/10.1080/08856257.2012.678664>
- Yoshida, M. (2012), "Mathematics lesson study in the United States: Current status and ideas for conducting high quality and effective lesson study". *International Journal for Lesson and Learning Studies*,1(2) 140-152. <https://doi.org/10.1108/20468251211224181>