Chapter 7

Development of Knowledgeable and Resourceful Learners

Alvyra Galkienė and Ona Monkevičienė

Abstract This chapter introduces a study carried out in the context of the transformation of the Lithuanian education system towards inclusive education, with the aim of revealing the educational factors that contribute to students becoming knowledgeable and resourceful expert learners in the universal design for learning (UDL) approach. The UDL framework was chosen as a systematic reasoning instrument for the teacher and the school, aiding in achieving the development of expert learner qualities in every student in the general education context and ensuring the quality of inclusive education. The chapter briefly introduces the theoretical approach of the research, the context of Lithuanian education and the school where the research took place, which is relevant for the interpretation of the results, and other important methodological aspects. The research data show that applying the UDL approach helped the teachers to modify the educational process in order to develop in students the qualities of knowledgeable and resourceful expert learners. The results, presented in a structured manner in the chapter, reveal the process and contributing educational factors to students' becoming actively perceiving, self-directed, knowledge-creating and co-creating learners and learners constructing their own deep comprehension. The research data reveal the methods used by the teachers to recognise and overcome the barriers in cultivating these qualities in their students. We also identified the emerging changes in teachers' dispositions when applying the UDL approach and designing lessons aimed at promoting the qualities of knowledgeable and resourceful expert learners.

Keywords Inclusive education · Universal design for learning · Learning barriers · Self-directed learning · Knowledgeable and resourceful learner

A. Galkienė (✉) · O. Monkevičienė
Educational Academy, Vytautas Magnus University, Kaunas, Lithuania
e-mail: alvyra.galkiene@vdu.lt; ona.monkeviciene@vdu.lt

© The Author(s) 2021

A. Galkienė, O. Monkevičienė (eds.), *Improving Inclusive Education through Universal Design for Learning*, Inclusive Learning and Educational Equity 5, https://doi.org/10.1007/978-3-030-80658-3_7

145

7.1 Introduction

The concepts and practices of individual inclusion and inclusion for all have been competing in the educational systems of many countries (see Chap. 1). The approach of individual inclusion is beginning to prevail, particularly when referring to the student's achievements and role in the process of their own learning. Students, especially those with SEN (special educational needs), are frequently acknowledged as passive subjects, lacking any active, self-directed or deep learning power from the perspective of the roles and responsibilities of teachers and students. Having failed to eliminate the barriers related to this aspect and the practical organisation of education, schools have not achieved a higher level of inclusivity in education based on inclusion for all. In this connection, some research studies have shown that educational practices can be changed by applying the UDL approach (Meyer et al., 2014).

The UDL is closely linked with constructing a flexible educational environment, which is accessible to all students (Meyer et al., 2014) and the formation of scaffolds when students need support (Sanger, 2020). In the UDL concept, the diversity of students is understood in its broadest meaning—different processes of information perception and its use are characteristic of all students (Rapp, 2014). The nature of students' differences predetermines the variety of education modelling. The application of the UDL principle 'Provide multiple means of representation' (see Chap. 1) establishes conditions for students to become familiar with information, perceive and understand information and construct knowledge. A flexible curriculum, means, application of information technologies promotes a better understanding of read texts (Brand & Dalton, 2012) and visualised narration (Cohn, 2020), which serve as scaffolds for information accessibility and the management of cognitive processes in cases of dyslexia, autism spectrum and other disorders (Rosita et al., 2020; Wainwright et al., 2020; Hartmann, 2015; Meo, 2008).

A knowledgeable and resourceful expert learner distinguishes themselves by the active perception of information and its transformation into deep knowledge (Meyer et al., 2014). The active and deep processing of new information focusing on meaning and the interconnections of texts, ideas, structures and integral relations, the use of higher cognitive strategies for the analysis of perceived information from different perspectives and its reconstruction, the linking of new knowledge with previous knowledge and reflection on ones' own learning are typical of expert learners (Marton & Saljo, 2008; Bran, 2014; Golightly & Raath, 2015; Asikainen & Gijbels, 2017; Samuels-Peretz et al., 2017; Peng & Chen, 2019). According to these researchers, the interaction between the strategies of information perception and reorganisation and intrinsic motivation are needed for the creation of personal deep comprehension. The expert learner has to possess an expressed intention to understand and be engaged in the creation of their own knowledge (Golightly & Raath, 2015).

Deep personal comprehension is more successfully constructed by self-directed students. The process of self-directed learning embraces the student's learning initiatives; the student takes responsibility for the development of their own

comprehension, demonstrates self-management of cognitive processes, recognises their own unique strengths and needs of developing their knowledge, set personal goals for the development of understanding, employ various information sources, choose the most acceptable and efficient learning strategies and self-evaluate learning outcomes (Salleh et al., 2019; Walt, 2019; Yang et al., 2020). Self-directed students use meta-cognitive, cognitive and social strategies of autonomous learning, such as searching for information, reorganising it, discussing key ideas in the learner group, creating new meanings, reflecting and others (Koc, 2019; Kim et al., 2019). Previous research has also shown that a self-directed student easily adapts to different learning contexts, such as face-to-face or distance learning (Houston, 2018; Kim et al., 2019; Yang et al., 2020; Lasfeto & Ulfa, 2020). The teacher assumes the role of a moderator and creates learning environments, foresees procedures and points out possible ways for students to construct their own understanding (Walt, 2019; Kim et al., 2019; Sukardjo & Salam, 2020).

As a knowledgeable and resourceful learner, the student possesses the ability to not only create personal knowledge but also efficiently become involved in the collaborative co-creation of knowledge. Poyry-Lassila et al. (2017) and Santosa et al. (2020) distinguished three necessary conditions for collaborative co-creation: a shared space for contact or online learning, a group of actively learning students and shared objects (ideas, experiences and sources of knowledge). The creation of shared knowledge occurs when students discuss with each other and with the teacher, exchanging already possessed or newly found information and sharing learning strategies. Heterogenous groups are more favourable for the co-creation of shared knowledge (Gratton, 2019). However, a positive interaction among all the students is necessary; teachers should use scaffolds that facilitate students' learning of the strategies of collaboration and co-creation of shared knowledge (Moore et al., 2020).

In Lithuania, just like all over the world, the goals of education system are set by taking into consideration students' different needs and the possibilities of the teachers to educate and develop a self-directed learner—that is, one who is able to individually construct deep authentic knowledge and act in collaborating teams (in other words, to educate knowledgeable and resourceful expert learners) (UPK, 2016). The Lithuanian National Strategy for Education for 2013–2022 (National Education Strategy 2013) set the goal to increase the accessibility of education and ensure the development of equal possibilities for all. However, the implementation of these objectives has not brought about the anticipated results so far and requires more considerable attention from researchers, educational policy-makers and practitioners. The results of the Programme for International Student Assessment (PISA) 2018 (OECD, 2019, Vols. I–III) show that the average achievements of Lithuanian students in reading, mathematics and sciences are still below the averages of students from other OECD countries. The lowest results were observed in the completion of assignments requiring higher-order thinking skills (e.g. in the area 'to evaluate and reflect on'), while the highest scores were obtained in 'to understand'. The percentage of students who did not achieve Level 2 (i.e. who experienced difficulties in information perception and reorganisation) is higher than the OECD

average. Therefore, the development of higher-order thinking skills (to analyse, compare, evaluate, conclude and search for information in new contexts) that enable a student to become a knowledgeable and resourceful expert learner is a relevant necessity in the national education system.

This has become a particularly relevant problem while intensively implementing inclusive education and striving for its high quality (Galkienė, 2017) because the full participation of all students in the process of education and the development of the qualities of a student expert learner, who constructs their own understanding, have not been sufficiently ensured. In Lithuania, more attention has been allocated to the teaching of students rather than student learning and the creation of means and environments that stimulate learning (Maniušis, 2018), and students generally lack the abilities of self-regulation and deep learning while creating their own knowledge (Degutytė-Kančauskienė, 2020). Schools and their teachers are in search of pedagogical strategies for creating conditions that enable all students (including those with SEN) to learn in mainstream education and become knowledgeable and resourceful learners. The UDL (see Chap. 1) is one of the new approaches of inclusive education and is open for its practical application and re-interpretation in its different socio-cultural contexts because the teachers who participate in the action research and follow the UDL guidelines (Novak, 2016) model specific goals, methods, means and environments to enable every student to be educated, develop optimally together with other students within their own powers and become an expert learner.

Striving to evaluate the influence of applying the UDL approach in the development of knowledgeable and resourceful learners in the inclusive school context, the following research questions were formulated:

- What qualities and abilities of the knowledgeable and resourceful expert learner are developed by applying the UDL approach?
- How do educational factors facilitate the development of knowledgeable and resourceful expert learners by applying the UDL approach?

7.2 Methodological Approach of the Research

The collaborative action process was chosen (see Chap. 3) to investigate the educational factors that contribute to developing the qualities of students as knowledgeable and resourceful expert learners by transforming the school practices of inclusive education following the UDL approach. The character of the planned local research and the active, self-reflected, self-transformative and investigative role of teachers fully coincided with the nature of action research (Mertler, 2019; Rowell et al., 2017; Ferrance, 2000). The teachers and the school principal, as well as the teachers and the authors of this study, actively discussed and reflected on the process of action research from the preparation stage to the end of the last cycle of action research. Charalampous and Papademetriou (2019) stated that teacher engagement

in collaborative dialogue promotes their deeper reflections. Collaborative action research is efficient while transforming the established routine practices, especially when there is a wish to test the influence of new strategies (the UDL approach in this case) of improving education quality (Rowell et al., 2017; Insuasty & Jaime Osorio, 2020).

Our collaborative action study consisted of three cycles (see Chap. 3): the first cycle aimed to identify the factors of inclusive education at school that are favourable or unfavourable for the development of knowledgeable and resourceful learners; the second cycle targeted the elimination of the student's learning barriers identified in the first cycle and the goal of the third cycle was to strengthen the successful practices modelled applying the UDL approach and eliminate the barriers of distance education. The action research was carried out by teachers from Vilnius Balsiai Basic School in cooperation with the researchers. The achievements in mathematics and reading of the school and of the sixth (seventh) formers who participated in the research were significantly higher than the average achievements of Lithuanian students. However, the level of completion of assignments that required higher-order cognitive skills, just like all over Lithuania, was significantly lower compared to those of other tasks (Report on Higher-order Thinking Skills 2019, the National School Student Assessment). Thus, the same problems related to the development of a knowledgeable and resourceful expert learner are characteristic of this school.

The school allocates considerable attention to the improvement of inclusive education because each class, including the one in the study, has several SEN students, as well as students from multilingual environments or who encounter learning difficulties due to other reasons. Teachers of English and Lithuanian who became familiar with the UDL approach and applied it for the first time participated in the research. After the second cycle of action research implementation, the quarantine due to the coronavirus was instituted, and all the schools switched to distance teaching. The teachers, who had already discovered the principles of education applying the UDL approach in the environment of contact education, were exposed to one more challenge—following the UDL framework while organising online lessons.

The following qualitative data collection methods were applied in the action research:

- Observation of lessons through audio recordings and writing comments: 38 lessons were observed (10 lessons during the first cycle and 14 lessons during the second cycle were observed in the classroom, while 14 lessons during the third cycle were observed online).
- Semi-structured interviews with students after the lesson (individually and in group): after every observed contact lesson, conversations were held with students whose learning was chosen to be observed to encourage them to reflect on their own learning; 43 interviews were audio-recorded.
- Student's reflections on the lesson: after the online lessons, the teachers asked their students to write down their reflections on their learning during the lesson; 37 written records of such reflections were gathered.

- Audio recordings of teachers' and researchers' reflections after the lesson: after every lesson, the researchers talked with the teachers about how they followed the UDL principles while organising their lesson, how they pursued the goal to develop knowledgeable and resourceful learners and how they created a barrier-free learning environment; possibilities for improving their lessons were also discussed (38 audio recordings).
- Audio recordings of group discussions of teachers and researchers: the researchers and teachers discussed the changes in the teachers' attitudes and practices of inclusive education aiming at the development of knowledgeable and resourceful learners, the challenges and ways of coping with them, discoveries, collaboration and learning (3 audio recordings).

The methods applied for the qualitative analysis of the collected data included content analysis according to Cohen et al. (2013) and thematic analysis following Braun and Clarke (2017).

7.3 Collaborative Action Research: Processes of Evolutionary and Breakthrough Change

The first cycle of action research (see Chap. 2) aimed to identify the contexts for the education of *knowledgeable and resourceful learners*. The teachers who conducted the action research identified the positive factors and barriers relevant to the improvement of inclusive education following the UDL approach in a Lithuanian school.

The *personal experience* possessed by the teachers differed (Fig. 7.1), and it was only partially favourable for improving inclusive education, aiming at the goal of the UDL approach to educate *a knowledgeable and resourceful learner*. Neither

Fig. 7.1 The context of developing a knowledgeable and resourceful expert learner in the Lithuanian school

teacher was familiar with the UDL approach but had accumulated different experiences in inclusive education.

Teacher Alma: *I learnt from zero. I heard of the UDL as a system for the first time when I joined the action research.*

The researcher: *What was your attitude towards inclusive education?*

Teacher Alma: *This also had to be learnt. Over 20 years of experience, I have never had such a diverse group of so many different children with their specific needs. Therefore, it has been a period of discovery for me.* (The interview with teachers, 3)

Teacher Goda: *I had had experience in inclusive education before. But it was not experience in applying the UDL approach. When Rita [a special pedagogue] worked in my school two years ago, our collaboration ... was continuous.* (The interview with teachers, 3)

Lately, attempts have been made in Lithuanian schools to teach as many SEN students in mainstream classes as possible. However, teachers still lack practical experience in inclusive education. The *school context* (Fig. 7.1) is frequently unfavourable for the development of inclusive education practices. Special pedagogues, speech therapists and psychologists are encouraged to collaborate with teachers searching for methods and means to educate SEN students in mainstream classes together. However, these specialists traditionally tend to provide individual assistance to students in their offices, and teachers feel left alone. The teachers who joined the action research in a Lithuanian school, just like many teachers in the country, prioritised specialist help at the beginning of the action research, although they understood that individual support for student learning does not promote inclusive education for all:

Teacher Goda: *We do not have any support from specialists. A special pedagogue is a central figure providing learning support to a student. ... Because I ... continued asking them to help me to construct scaffolds for that child.*

Teacher Alma: *Well, when Tomas [a special pedagogue] worked in our school, all the paperwork was done at the beginning of the school year. All the [SEN] children were counted and described and plans for how to educate them were devised. But ... that was all. And then you used to send that child [from the lesson] to the special pedagogue.*

Teacher Goda: *The speech therapist [resided] in her wing, somewhere separately. But no specific assistance, never.* (The interview with teachers, 2)

The teachers acknowledged that when only two teachers engaged in the improvement of inclusive education by applying the UDL approach, they lacked support from their colleagues. Some teachers continued working following the subject-centred paradigm of knowledge transfer: the learning itself and the taught subject, rather than the student, are the centre of attention.

Teacher Alma: *We talked to teachers of mathematics, and they said: 'What UDL are you talking about? I have to solve mathematical problems'. That's it. There is a mathematical problem.* (The interview with teachers, 3)

The ideas of social and educational exclusion that are still obvious in the society in the country also become a barrier to inclusive education at school because segregational attitudes penetrate into the school environment through parents:

Teacher Alma: *You adapt the programme to the child in that total mass of students; you assign a tolerant friend or a just child, whose father will not contradict that a weaker [learner] is sitting next to his son or daughter.* (The interview with teachers, 1)

The teachers' experience shows that improving inclusive education implementation may be more successful if the whole community is engaged in this process.

The teachers conducting the action research emphasised the barriers related to *teaching methods and aids* (Fig. 7.1). Since English is taught using adapted textbooks and other aids by foreign authors, the methods used in the material are based on a different mentality, which is closer to the UDL approach and more favourable for inclusive education. However, Lithuanian language textbooks serve as barriers to inclusive education. The teachers themselves have to eliminate them by following the UDL approach and developing new methods and aids. All this requires intensive consideration, hard effort and a large time investment.

Teacher Goda: *During the Lithuanian language lessons, we perform some experiments on how to model learning on the basis of a totally different national mentality system. ... It has to be transferred to another medium, which is cardinally different, that is, anti-UDL. ... For example, I have a Lithuanian textbook published 30 years ago and I have a new textbook for the Lithuanian language. Transfer of knowledge prevails there. ... This is theory, a lot of it [theory] (shows the pages in the textbook). ... And then exercises start. They are all have the same structure. ... And we remain in this medium of knowledge transfer very successfully. ... For English, we have a transfer of already tested methodologies and aids to a different national context.* (The interview with teachers, No.3)

In the second cycle of action research, the teachers applied the UDL principle 'Provide multiple means of representation' to improve the quality of inclusive education, targeting the education of a *knowledgeable and resourceful learner*. *Going deeper into UDL* (Fig. 7.2) posed a challenge to the teachers. Teacher Alma went through a transformational breakthrough in her attitudes when she looked at students with different needs, her own teaching perspective and her acting and thinking habits through the prism of UDL. The reconstruction of teachers' self-evident and settled practices through critical reflection is usually followed by tension.

Teacher Alma: *But all the CAST texts were hardly understandable to me—a lot of everything and at different levels. You have to know a lot. ... I thought, oh well, you had to start this action research just to realise that you know nothing. ... When you evaluate yourself, you evaluate according to what you do not do. I understood that I had to start learning again. So my self-esteem as a teacher or as a specialist was very low at that time.* (The interview with teachers, 3)

Teacher Alma overcame the critical point by *practically testing* UDL ideas, discovering new possibilities for the development of students as *knowledgeable and resourceful learners* and constantly reflecting on them:

Teacher Alma: *But later that learning occurred naturally. If you don't know something, you go on YouTube and watch videos. Then you start applying this in your lessons and discover how to do this or that. ... This action research opened up new opportunities to understand the process of education in a different way for me. This process offers numerous choices for a student on how to learn or how to show what he or she has learnt. I tried out how to present information in several ways and to create choices for learning.* (The interview with teachers, 3)

Fig. 7.2 The search for ways to develop a knowledgeable and resourceful expert learner gradually by mastering the principles of UDL

Teacher Goda experienced a slow, evolutionary process of change in her practices, grounded on the theoretical construct of UDL and aimed at developing a knowledgeable and resourceful learner. *Going deeper into UDL* was time-consuming, which is typical of deep learning.

Teacher Goda: *I experienced evolution rather than a breakthrough. ... UDL requires time to theoretically perceive this method and to apply it every day. I just need slightly more time. If that were my working language, it would be easier. ... Because it is a system. To apply a system is different from applying its separate elements.* (The interview with teachers, 3)

The previously acquired experience in inclusive education was very helpful to the teacher. Evaluating the improvement of inclusive education in light of the goal of UDL to educate and develop a knowledgeable and resourceful learner, the teacher emphasised a constant, slow and deep movement forward, changing the essence of the educational process:

Teacher Goda: *I am on the way that every teacher has to make while transferring the UDL system into the anti-UDL environment. I have applied most of the principles all the time, and I really want to change our system of education as much as I can.* (The interview with teachers, 3)

The teacher stressed the benefits of *co-learning* (Fig. 7.2), constant consultations with each other at school and after lessons, planning lessons and reflecting on the analysed sources or viewed recorded lessons. The teachers also considered discussions with the researchers to be very useful because they helped to attain a concentrated understanding of the essential UDL principles and to identify the features of students' active perception, deep understanding and thinking in learning activities. They also found the reflection sessions after the observed lessons very helpful.

In the third cycle of action research, a challenge to transferring the discovered ways of inclusive education following the UDL principle 'Provide multiple means

of representation' emerged in the context of distance education (due to the COVID-19 pandemic). The goal of developing a knowledgeable and resourceful learner had to be achieved under changed conditions.

While conducting the action research, the teachers envisaged their *personal strengths* (Fig. 7.3), which helped them to cope with new challenges and transfer the acquired experience into the system of distance education. For example, Teacher Alma's strength was openness to change, which allowed her to modify her attitude towards the process of teaching. The teacher's position towards the development of the student *as an expert learner* and towards the relationship between the powers and responsibilities of the teacher and the student underwent changes. The teacher understood that, through UDL, the student's perception becomes more active, the student constructs a deeper personal understanding and appears to be an expert in their own learning, being able to choose how to learn.

Teacher Alma: It seems to me that I am ... very open to change. This openness helped me to change. ... I understood that it is important to allow children to choose how to learn themselves. But I had to discover myself how to achieve this in the context of [face-to-face and distance] education. ... I became more oriented towards the student and their improvement, putting more responsibility for their learning on their shoulders. (The interview with teachers, 3)

The teacher's openness to innovation and the necessity of moving into the environment of distance education encouraged her to look for digital learning technologies that could provide students with more choices regarding learning modalities or tools. The teacher discovered virtual environments which increased *inclusion for all students*, promoted self-directed learning, ensured learning success by allowing a student to choose the most appropriate learning methods and aided him or her.

Teacher Alma: I discovered the power of video records and digital tools for learning English online. ... Video records have subtitles. You can stop and read them, you can switch on the dictionary, type in the word, and immediately see the translation or hear its pronun-

Fig. 7.3 A maturing attitude towards the development of a knowledgeable and resourceful expert learner by applying the UDL principles

ciation. ... You can switch on all the tools for checking spelling while writing. (The interview with teachers, 3)

The *personal strength* (Fig. 7.3) of teacher Goda, who underwent an evolutionary change in her attitudes, was the promotion of her students' self-directed learning. Applying the UDL approach encouraged the teacher to place less accent on the special pedagogue's (who worked in a separate office) individual support of students and to create an environment that includes every student in the process of co-learning by providing the possibility to search and make one's own choices on how to learn.

Teacher Goda: I had always encouraged my students to learn independently, but I used to do that in a more elementary way. And here I went through evolution. I started observing every student more attentively—how they search for information, what and why they choose and what suits them best. I look at the students who experience difficulties with even more attention now. I provide them with more help now. ... Inclusion in my classroom turned into deeper one. Better considerations and planning of higher level. ... I apply the majority of UDL principles that educate every student as a learning expert as the basis of inclusion. (The interview with teachers, 3)

Generalising, it can be stated that the action research study targeted at developing a *knowledgeable and resourceful expert learner* with the help of UDL principles encouraged teachers to look more attentively at the differences between and possibilities of students with different needs and helped them to search for multiple means of information representation. The evolutionary or breakthrough paths for changes in the teachers' attitudes and practices were predetermined by conditions such as teachers' personal experience and school context.

7.4 Educational Practices of Students' Becoming Knowledgeable and Resourceful Expert Learners

Actively Perceiving Learners: Stimulating Students' Active Information Perception Processes An actively perceiving learner not only watches but also sees, not only listens but also hears. The emotional management of perception processes and the active selection of information following one's own experience and interests are also characteristic of such learners. While teaching students with different needs, teachers searched for ways to stimulate the information perception processes of each student to make their learning more efficient. While conducting the action research study, the teachers organised lessons following the UDL approach and discovered directions for educating students to actively perceive information and for increasing the inclusion of every student. These directions are provided below.

Gamification that Activates Information Perception Employing Information of Several Modalities The research data show that information provided in multiple

ways and its gamification stimulate the perception of typically passive students. The lesson fragment provided below proves that Tadas' perception was activated by employing a combination of ways of presenting information (as video and audio material), through the gamification of learning (organising a quiz) and by providing additional motivation (a plus for a correct answer). One of the goals of the lesson was to remember ancient works and tools to prove that the Lithuanian folk song '*Rūta žalioji*' (Ruth the Green) is a work song. The teacher showed some pictures on the screen, and the children were asked to guess the tools they saw and their purpose.

Teacher Goda: *I invite you to take part in a quiz. You'll have to guess what working tools you see. You'll have to name them, too. ... The three best students get pluses. ... Raise your hand if you see a tool you know.*

Having shown an old scratch plough, the students gave the correct answer almost unanimously: *A scratch plough.*

Tadas: *A board.* (A spindle was shown.)

Teacher Goda: *Ok, it is a board, but what is it used for?* (Nobody guessed this tool right. The teacher gave its name and explained its purpose.)

Tadas: *A scythe.* (A sickle was shown.)

Teacher Goda: *No.*

Tadas: *Wait a minute, this is... a sickle!* (The other students had given the correct name of the tool earlier. Tadas did not get points, but he actively engaged in guessing and was more active, although he did not raise his hand.) (Observation, 12)

This fragment of the lesson reveals the student's involvement and active search for a concept: Tadas provided the name of a similar concept (a scythe), searched for the right word ('*Wait a minute, this is...*') and then found the word 'sickle'; he also named the material the tool was made from (board). The pictures of working tools activated the students' perception of the tools' functions and enabled them to remember the name of a tool the students had heard of before. Moreover, the perception of Tadas was also activated by the quiz. Even without raising his hand, the student was eager to say the names as early as possible. According to the teacher, '*His strongest side is competitive learning*' (Reflection with the teacher, 12). The teacher had also noticed that playful competition helped each student to learn better. During the contact lessons, the teachers included the channels of as various modalities for the perception of information (e.g. to demonstrate active and passive principles: '*frying eggs*' and '*fried eggs*' with the help of body). Exposure to different teaching modalities increases the chance of one of them activating the information perception processes of students stronger than others. Moreover, one way of conveying information may be more favourable to one student than to another. Thus, receiving information through different modality channels and gamification can change students' perceptions from passive to active.

Insight into the Meanings of General Concepts and Expressions Through the Relevant Context of Personal Experience Information perception processes are activated when the learning material is linked to a personal experience that is relevant to the learner. This increases the inclusion of every student in the learning process and ensures learning success. To ensure a more active expansion of stu-

dents' English (non-native) vocabulary and to enable them to better understand the meanings of phrasal verbs, Teacher Alma chose a topic relevant to the students (self-isolation) and encouraged them to use active phrases to present their own experiences. The children were asked to read the text 'Stir-crazy and climbing the walls (Life during lockdown)' by Kate Woodford, to memorise the relevant phrases, to apply some to themselves and to describe their own self-isolation experience during quarantine.

Vaida reads the sentence: *There is a coronavirus in the world; everyone needs to be seated in a lockdown.*

Teacher Alma: *Elzé will express her opinion if this is a minus or a plus.*

Elzé: *This is a minus. This is bad for people who do not like being at home. And they lose jobs.*

Teacher Alma: *Yes, that's right. Maikas, give your sentences, please.*

Maikas: *Shall I show the sentences?*

Teacher Alma: *Yes, please... It is easier for other students to discuss when they see and hear them.*

Maikas reads: *In this quarantine, I'm getting to grips with my school lessons.*

Teacher Alma: *Yes, you have used the phrase 'getting to grips'. What does it mean?*

Maikas: *Trying to learn.*

Teacher Alma: *Ok. Vaida, is it positive or negative?*

Vaida: *I think, it's positive.* (Observation, 35)

Learning new expressions based on relevant personal experience helped the children to better understand the meaning of these expressions. After quarantine was instituted in the country, self-isolation became an experience relevant to everybody. The students found it interesting to talk about their own experiences and express their opinions about the positive and negative aspects of this state. For this reason, they attempted to clarify the meanings of many previously unheard expressions, memorise them and use them correctly in sentences. According to the teacher, all the students, even the weaker ones (e.g. Maikas' English language skills are lower compared to others because he comes from a multilingual environment), memorised and properly used expressions (phrasal verbs) in their sentences. Distance learning turned out to be very convenient to access digital texts, complete assignments, demonstrate them to others and comment on them. During the online lesson, the teacher allocated a considerable amount of time to independent communication on the topic, for which the students prepared in advance and which enabled the learners to successfully develop oral communication skills as well.

The perception of information that is unrelated to personal experience is usually a challenge for students, as well as the teacher, and the latter has to consider it a possible barrier to information perception and to search for educational solutions in advance. And what if the lesson has to be delivered online due to the coronavirus pandemic? Applying the UDL approach, the teacher of Lithuanian found appropriate solutions for organising the lesson—for example, emphasising the emotional aspect of information that is distant from personal experience through the live experience of another person in the context of online learning and through the presentation of information employing different modalities and means.

The observation of online lessons revealed that students *emotionally sense information that is distant from their experiences and better understand it through the live experience of another person*. As expert learners, they recognise and identify information that evokes their emotions; this information can also be better memorised and may change their behaviour. This is illustrated by the following example from a lesson. The teacher of Lithuanian foresaw the barriers for seventh formers to understanding the creative meanings of the Lithuanians exiled to Siberia and other remote areas by the Soviet government (1940–1950) because they did not possess such experience. According to the teacher, the meanings of exiles' creative works would become closer to the students if a living witness or a young person who came into contact with the remaining witnesses of the exile (with former exiles still living in the areas of deportations or taking part in finding and cleaning the graves of Lithuanians there, etc.) would tell the students about exiles and their fates. The teacher invited a member of the expedition 'Mission Siberia' to the places of deportation to take part in an online lesson. The students' reflections at the end of the lesson show that it was as if the statistical data on the deported people became alive: Pijus said, *'I haven't known that so many people were exiled. I thought the numbers were slightly lower.'* while Morta remarked, *'The huge number of deported people made an impression on me'* (Reflection with students, 29). The aspect of emotional experiences was felt in the children's comments and evoked by the stories of the participant in the expedition 'Mission Siberia'. Comparing the number of deported people to the population size of Kaunas and the territory occupied by the camps to that of France turned pure statistical figures into live images in the children's minds and contributed to a better understanding of the scale of the national tragedy and suffering. The students' reflections also showed that emotionless numbers on exiles became live people with names, surnames and their own fates. Kotryna reflected on her understanding and expressed this thought as follows: *'I understood that these people are not statistical figures. They have families, so perhaps I'll join the reading of their names and fates'* (Reflection with students, 29). The children's reflective considerations were prompted by the participant in 'Mission Siberia', who told about the annual commemorative campaign 'Say it, hear it, preserve it' held in the town squares, where the exiles' names, surnames and fates (returned, did not return or unknown) are read from morning to evening. Kotryna's intention to join the readings of names and fates proves that strongly emotionally charged and perceived information is capable of changing values and behaviours. The lesson also showed that distance learning does not weaken the transfer of another person's living experience. On the contrary, using images, sound and video allows for conveying enriching information and enhances the impression left on the audience.

Another online lesson disclosed that the *presentation of information through different modalities and means* is useful for the acquisition of absolutely new experiences and the generation of new ideas. During the distance lesson, which aimed to enable the students to better understand the meanings, attitudes and experiences in the creative works about the partisan war striving for liberation during the Soviet Union occupation (1944–1953), the teacher used a video and pictures of the partisans' life, schematics in PowerPoint and a narration. Then, all the students read

aloud an extract from *‘Apie laisvės kovą ir didvyriškumą’* [‘On freedom fight and heroism’], a complex work written by partisan movement participant–writer Bronius Krivickas. The further discussion clearly showed how the students linked the information on partisan fights received in different ways with the ideas expressed in the writer’s work. The students provided various opinions, as follows:

Sofija: *He admires partisans.* (about the writer’s feelings and attitude)

Pijus: *I think he wrote to encourage partisans to fight stronger.* (about the writer’s joining the partisan movement)

Tadas: *Maybe because he is approaching death.* (The student thinks about the writer’s legacy after his death because the writer felt he could die soon.)

Vaida: *I think that he wanted to show other generations how people fought for freedom.* (about the enduring value of creative works)

Antanas: *I admire their [partisans’] persistency. They knew that enemies were stronger but, nevertheless, they continued fighting for their freedom.* (about the inspiration that the described fights of the partisans provide) (Observation, 31)

The fragments of lesson demonstrate that the teacher successfully predicted the possible barriers in perceiving the meanings of the creative works of partisan writers because partisan fights constitute a very distant, entirely new and hardly understandable experience for seventh formers. To help her students to learn about and understand the phenomenon, she employed alternative ways of presenting the information. Understanding the experience of partisan writers later contributed to successful insights into the ideas behind the writer’s work, their considerations and verbal expression. The students’ reflections revealed that they identified what had helped them to better comprehend the theme. Since the information was presented in different ways, the students were able to comprehend it in a personally suitable way, and they succeeded perfectly in envisaging such a way.

Vaida: *I read attentively and followed the lesson, watched an extract of the film, wrote down essential things from the teacher’s slides. This helped me because I was able to better memorise and understand what I had learnt.*

Sofija: *I used the textbook because the material is presented there in the most appropriate and easiest way to me.*

Teofilius: *The textbook. Because it is easier for me to read than to listen to.*

Maikas: *I used the internet website www.partizanai.org for this assignment. This helped me to find out more information about Lithuanian partisans.*

Kotryna: *I used my exercise book and pen ... and listened very attentively because I memorise what I write down better.* (Reflection with students, 31).

Vaida relied on several modalities of learning: video, written text, verbal information, schematics and own notes. Other students prioritised other modalities: Sofija—the textbook (reading) because the information there is adjusted to the learner’s age and is accurate; Teofilius—text reading (because it is difficult for him to concentrate while listening); Maikas—Internet information because it is visual and attractive; and Kotryna—kinaesthetic aspect (writing down information). Thus, applying the UDL approach, the students successfully used the provided possibility of receiving information in alternative ways and successfully reflected on this experience. Distance learning creates favourable conditions for students to acquire new experiences through channels of different modalities that are acceptable to them.

Self-directed Learners: Transformation of Teacher-Guided Student Learning into Self-directed Knowledge Creation The application of the UDL approach helped the teachers to gradually decrease their direct leadership and encourage students' self-directed learning. Several aspects of lesson organising that increase possibilities for students' self-directed learning and facilitate students' reflection were identified during the action research. In the context of contact learning, situations of self-directed learning were created using multimodal presentations of information and pair or group activities that promoted learning from each other. During the period of distance learning, group activities for learning something new were not used almost at all due to technical limitations and the quarantine restricting social interactions. However, employing multimodal presentations of information and gamification facilitated the creation of self-directed learning situations and students' self-directed checking and correction of their completed work. The creation of an inclusive education environment applying the UDL principles improved the development of every students' self-directed learning skills, ensuring greater success in learning.

Self-directed Discovery of Word Meanings in the Context of Multimodal Presentation of Information and Team Learning The self-directed learning of students is encouraged by situations in which the learning material is presented and the learning process is organised in different ways, creating conditions for the students to independently clarify and understand new information. The creation of such a learning situation is illustrated in one of the observed English lessons (Observation, 14). The goal of the lesson was 'to learn new words/phrases related to food'. In order for students to clarify the meanings of unknown English words and phrases themselves, they were asked to watch Jamie Oliver's video '15-Minute Meals'. While watching the video, one group of students was asked to write down the words of ingredients and the other group was assigned the task to select the verbs related to actions of food preparation. Later, both groups created sentences together: one group gave an action of food preparation, the other—an ingredient. The three observed girls successfully used the video material to develop their vocabulary on food preparation. In their reflections, they pointed out that the video material helped them to independently 'discover' the meanings of words and phrases. The girls understood and clarified the simultaneity of information received in different modalities—the video helped them hear the word and see the object or action performed by the doer. The simultaneity of receiving information by hearing and sight 'unlocks' the word meaning and helps the students to learn words on their own. For example, Vaida commented, '*The video was most useful. ... They say what they do, you hear and see and understand the word this way*'. Teamwork, when one team gave a verb and the other provided a related ingredient, helped the girls to make collocations. Justė said, '*This allowed connecting a particular food word with a cooking action*'. When asked about challenges or obstacles, the girls identified the problem of writing down the heard and understood words: Sofija stated, '*To write the words down was most difficult. ... We understood all the words, but it was difficult to write them down without mistakes*' (Reflection with students, 14). The exper-

riences of the girls as expert learners show that properly chosen video material promotes the self-directed enrichment of vocabulary. However, no thoughts were given about any scaffolds in the lessons that helped the students learn the spellings of the new words. Teamwork partially contributed to overcoming this challenge: Sofija said, ‘For example, [my team member] *helped me with the spelling of the word I did not know how to write it*’ (Reflection with students, 14). Thus, appropriately used modalities of receiving new information, especially if more than one is applied in the lesson, as well as teamwork that is favourable for learning from each other, promote students’ self-directed learning and becoming expert learners. By modelling situations of self-directed learning, the teacher has to foresee what obstacles may be encountered by the students and to create scaffolds useful for coping with barriers.

Creation of Self-directed Knowledge Using Multimodal Means of Receiving Information and Gamification in the Context of Distance Learning Under the conditions of the coronavirus pandemic, the English teacher Alma improved the modelling of situations for the self-directed construction of one’s own knowledge in distance learning environments. Pursuing the lesson goal of learning to speak about famous people in English using the past simple tense, the teacher created a complex situation of receiving information through channels of different modalities: she prepared questions that required answers using the past simple (for understanding the relevant language structures and their use) and suggested that students find answers to the questions (vocabulary, phrases) while watching the video ‘Christopher Columbus 1451–1506. Educational Video for Kids’. The students could also look at the images and listen to the speech, stop the video and read the subtitles, write down the necessary words or go back and listen to the phrases several times. Thus, the environment was created for the students and enabled them to receive information via different modalities, manage the object of receiving information (a video) and learn at their own pace and in their own style. A student can perceive information in a complex way (through video and audio simultaneously) if this facilitates their learning or can focus more on images and subtitles, depending on the student’s strengths in comprehension skills. After the students completed the assignment, the teacher asked Timotiejus:

Teacher Alma: *Where did he plan to sail?* [in Lithuanian] *To South America or somewhere else?*

Timotiejus: *To America.* [the SEN student did not understand where Christopher Columbus had initially wanted to sail and named the destination he had reached instead.]

Teacher Alma: *What do others think? What did you understand?*

Sofija: *He planned to sail to India.*

Teacher Alma: *Why did they do that?* [in Lithuanian] *Why did they invest?*

Vaida: *They wanted new things.*

Teacher Alma: *Kotryna, how many ships travelled?*

Kotryna (in Lith.): *I haven’t written this down.*

Teacher Alma: *But you have seen the video.*

Kotryna: *Three ships sailed.* (Observation, 32)

The lesson fragment showed that the information received in multiple ways and the modelled situation of its search encouraged students' self-directed learning. The majority of students provided correct responses to the questions. Sofija and Vaida understood the information accurately and used the past simple tense. Kotryna had not marked the answer while watching but was able to provide the correct answer referring to the visual information. Timotiejus, who had language comprehension problems, failed to understand both the teacher's question and the video properly. If the teacher had presented the question in writing and pronounced it, it would have been easier for him to understand. Scaffolds would have been helpful as well: to plan to sail—to sail. The student himself knows very well that images and keywords help him a lot. Distance learning did not impede but only helped to obtain information in different ways. While reflecting on the lesson, the teacher explained that she used multimodal information acquisition channels in a targeted way and that they proved to be efficient while developing the skills of students in perceiving information. In the words of Teacher Alma, *'Perception of information occurs through a big number of channels. Earlier I thought that it was enough to find a text, to print it out and bring it to the classroom ... Now I understand that they need a lot of visual information, significant visual enhancement on the same theme. Now I try to show them a video on the related theme ... [f]or vocabulary development or consolidation of grammar'* (Reflection with teacher, 32). It is clearly seen that by providing new ways of presenting information, the teacher focuses on the whole class to enable every student to choose a personally appropriate modality. This facilitated the students' self-directed learning.

Delivering another lesson, which aimed 'To revise the formation of the past perfect tense', the teacher applied a multimodal method of information presentation—gamification—a thinking tool for the selection and systemisation of knowledge. The teacher suggested watching the playful video 'The Grammar Gameshow. The Past Perfect. Episode 13', which targets adolescents and presents the information in the form of a 'Mindfight'. She recommended to the students to clarify and select the essential information on the past perfect by focusing on three essential meaningful units and filling in a three-column table with the following headers: 'How is it formed?', 'When to use it?' and 'Time expressions'. The lesson fragment showed that the students successfully coped with the assignment:

Teacher Alma: *Who would like to explain how this tense is formed?*

Gritė: *Had + 3rd form of the verb.*

Teacher Alma: *Ok. [She writes the information in the table, which is shown on the screen for the students.] How to use it? Who would like to read?*

Sofija: *What had happened by a certain time.*

Teacher Alma: *Let's specify what had happened in the past before another action in the past. [She writes in the table.] Ok. Can you give an example?*

Sofija: *We had talked before the dinner started.*

Teacher Alma: *Now time expressions, please.*

Vaida: *I don't know if it's ok or not, but I've written 'by the time'.*

Teacher Alma: *Ok. 'When' is also correct. [She writes in the table]. (Observation, 33)*

The lesson fragment clearly proves that the change in the teacher's position (from conveyer of information to students' learning coordinator), an active search for and selection of information, its division into smaller meaningful units and, at the same time, seeing a general picture is encouraged. The students understood and selected information on the past perfect while watching an interactive game with episodes that contained body language, spoken language and subtitles, all of which improved their understanding with the help of emotionally coloured, playful information presented in various modalities. The three-column table provided by the teacher was a very useful thinking tool which helped the students not to forget to follow the key references, ensured a selective watching of the video and encouraged them to think over the received information. Filling in the table together with the students, the teacher enabled them to memorise certain meaningful units and use them later. While reflecting on the most appropriate ways of learning, the students emphasised watching the video: Maikas said, '[I would like] *the teacher to send me the video with explanation*', while Elzè affirmed, '*I like watching video because it is the easiest way to get information for me*' (Reflection with students, 33). Thus, obtaining information themselves from internet learning objects is appropriate for the students and facilitates their understanding.

Self-directed Checking and Correction of Completed Work Using Tools of Distance Learning Platforms The self-directed distance learning of students was significantly enhanced by the platform Google Classroom used by the teacher. Reflecting on the possibilities of distance learning, the teacher explained, '*I discovered this Google Classroom. Everything is convenient here—corrections of children's works and comments, which are visible to them. And they can correct and send back*' (Reflection with teachers, 2). The students' reflections showed that the Liveworksheets exercises were helpful to them, especially when the online exercises were assigned to them according to their level. After completion, a student can look through the exercise. As mistakes are shown automatically, a student can redo the task until the result satisfies them and then send it to the teacher for evaluation. This is how their self-directed learning occurs, and as expert learners, they are able to reflect on it. Gritè indicated, '*While learning, I really like to do assignments on Liveworksheets because you complete them and know your mistakes*' (Reflection with students, 38).

Constructing Deep Personal Comprehension: Grasping Patterns and Using Knowledge Organisers and Scaffolding Students' deep understanding is constructed by restructuring the received information and linking it with their previous knowledge, changing the ways and perspectives of information reflection, envisaging new ideas and meanings and understanding the separate parts and the whole. Knowledge organisers and scaffolding applied in the context of inclusive education help every learner to construct deeper personal knowledge.

Grasping Models for the Reorganisation of Information and Possessed Experience, their Clarification and Use in the Thinking-Promoting Environment of Team Learning

Seventh formers have extensive live experience, but it has not been systemised into science-based concepts, structures and systems. The ability of students as expert learners to employ models for the reconstruction of this experience tends to deepen their knowledge and understanding. Striving to develop the qualities of expert learners in their students, teachers successfully used structural models for the reorganisation of information. The observation of the lesson, where the students prepared for the analysis of work songs, revealed the process of how the properly chosen tool of visual thinking, group work and the possibility to use a variety of information sources enabled students to systemise their possessed unstructured knowledge into a system with clear logic. The teacher asked students to group old works performed in the past according to the seasons of the year: *'Draw a circle of past works. Divide it into four parts—four seasons of the year. There should be at least two activities in each part. Use the internet, your friends' help, textbooks'*. Contemporary city children encounter a serious challenge in attributing the works performed almost a century ago to seasons of year. They are not very well aware of agricultural works (which are not typical of townspeople) and do not know the seasons in which they were carried out in. Vaidotas, Tadas and Antanas were members of the same group.

Vaidotas: *What did they do in spring?*

Tadas: *They ploughed.*

Vaidotas takes initiative in the discussion: *And what about winter? In winter? They chopped wood.* (The student is right—people used to take care of wood in winter after the agricultural work was over.)

Antanas: *Do they chop wood in winter?*

Tadas: *So when do they chop wood?*

Vaidotas: *They chop ...* (The student searches for information on the internet.)

Antanas: *They chop wood in autumn.*

Tadas: *So, do they chop wood in autumn? Or in winter?*

Vaidotas: *They ploughed the land in winter.* (The student is wrong.)

Tadas: *It is impossible to plough in winter: Land is frozen.*

Vaidotas: *Ok, winter. What do they do in winter?*

Tadas: *People chop wood.*

Vaidotas: *Let's write it down. They chop wood.*

Vaidotas: *They fish in winter. On the ice.*

Vaidotas asks the teacher: *Can people fish in winter?*

Teacher Goda: *Yes.*

Vaidotas: *When do they plough?*

Teacher Goda: *They plough two times. In spring and in autumn.*

Vaidotas: *I didn't know that.* (Observation, 17)

In this case, the students reorganised their inaccurate experiential knowledge into a logical system using the visual thinking tool 'The circle of works in the past', discussing with each other, providing arguments to support their idea, referring to the internet and checking with their teacher. The students successfully completed the assignment. Initially, inaccurate knowledge was turned into solid systemic

knowledge through the common process of knowledge construction, which is beneficial to every child.

The Use of a Knowledge Organiser and Scaffolding for the Construction of One's Own Knowledge and Reflection The UDL context created in a targeted way encourages children to think of and strategically use methods of abstracting features of compared objects from provided practical examples. This is illustrated by the situation described further. The students were learning to write a formal and an informal letter. The teacher introduced a challenge to the children: *'Today, we are going to analyse examples [letters] as scientists and to fill in a table ... We are going to clarify the differences between a formal and an informal letter'*. The children worked in groups. In the beginning, Kotryna, Vaida and Justė had a chaotic discussion, but Vaida found a strategic way of working on the assignment and explained it to the other girls: *'In the beginning, I read what is written in the letter. And then I chose words to describe it. Or I write an example'* (Observation, 11). Vaida understood how one could consistently compare the letters and abstract their features: by reading the beginnings of the letters, thinking about how an informal and a formal letter start, reading the content and finding the words to characterise the language of the text, reading the endings and reflecting on the differences. Reflecting on his own learning, Vaida positively evaluated the benefit of the *knowledge organiser*—the comparative table 'Informal letter–formal letter'. According to the Vaida, the two adjacent columns helped to more clearly distinguish the differences and abstract the features: *'That table. We wrote one thing [in one column], we wrote the other thing [in the other column] and then you see everything'* (Reflection with students, 11). The presented example shows that a learning situation which directs students to independent work through scaffolds (in this case, a useful table promoting children's thinking) facilitates children's independent development of new thinking strategies and deepens their understanding.

Reflection on Possessed and Newly Acquired Knowledge by Applying Thinking Tools in the Context of Distance Learning To facilitate the development of the skills of expert learners—learning to recognise what they already know and the new information they are learning—and to improve their English communication skills, the teacher asked the students to watch the video '300 English Questions and Answers', which provides questions and answers as text and verbal information. The teacher suggested watching the video for three minutes and then drawing a table with two columns titled 'I knew' and 'I didn't know'. She also asked the students to write three questions and answers in one column and another three questions and answers in the other. The students were asked to present the results during the lesson: *'To which questions did you already know the answers? Which answers contained totally new information for you?'*

Teacher Alma: *Let's start with what you knew.*

Augustina: *What is the capital city of Spain?*

Teacher Alma: *Say in a full sentence, please.*

Augustina: *I know that the capital city of Spain is Madrid.*

Teacher Alma: *Use the form—I already knew that ...*

Augustina: *I already knew that the capital city of Spain is Madrid.*

Teacher Alma: *And what was new to you?*

Tadas: *I didn't know that an ant can lift 50 times its own weight.*

Teacher Alma: *Why did you know some things, but you didn't know others?*

Tadas: *We knew general knowledge but didn't know specific facts.* (Observation, 36)

The lesson fragment shows that it was a very suitable exercise to encourage the students' considerations about what they did and did not know. The video was convenient for the students themselves to make this distinction, answer the questions choosing the appropriate sentence beginning and write each answer in the appropriate column. The recognition of new information and linking it to already possessed information contribute to constructing deep personal understanding.

Balancing Students' Authentic Knowledge Creation and Co-Creation of Knowledge Following the UDL approach, a shared learning context for all the students in the class was created, although particularly considerable attention was allocated to the creation of learning alternatives and the possibility of learning in different ways and using different means. Being able to learn alone, in pairs, in groups or all together contributes to balancing the individual and to the collective creation of knowledge. The action research revealed the methods discovered by the teachers to organise lessons by ensuring the individual and collective creation of knowledge in parallel. All the students were included in the co-creation of knowledge through the use of various prerequisites to support each other's learning.

The Use of Created Possibilities for Learning in One's Own Style in the General Context of Contact Learning The observation of lessons revealed that the children's group work, a visual thinking tool (a comparative table titled 'Informal letter-formal letter') and an extra help tool (examples of how to fill in the comparative table) used as scaffolds to promote children's thinking established favourable conditions for students to learn in their own learning style. The situation presented further shows how Justė used her learning style in the UDL context. She is most successful at being a proactive learner, communicating, raising questions and using scaffolds for the whole class (systemising information, additional information, etc.). She read the text of the letters and the names of the two parts of the comparative table aloud, asked her group friends questions (e.g. '*Is this formal or informal* (showing the text)?') and checked with them whether she was thinking in the right direction. When her group members did not answer her question of how to formulate a complaint in a formal letter in English, the student raised her hand and asked the teacher, who answered, '*Make a complaint*'. Thus, the student's vocabulary was expanded by introducing new concepts. The student actively used an extra help tool. Using help from her group friends, Justė corrected the farewell phrases of the informal letter from 'please' to 'love you' and 'bye'. She finished the formal letter using the teacher's explanation, only in her own form: '*(Dear Sir/Madam) Yours faithfully; (Dear Mr./Mrs.) Yours sincerely*' (Observation, 11). Reflecting on her own learning, Justė emphasised that the independent search for information is an acceptable way

of learning for her ‘*because you can discuss with your group members. Reading can help you to memorise better, and your group members can help you too. ... [When you work on your own,] you see what you don’t know. And you can also ask the teacher. And when the teacher tells you everything, then you think—ok, I’ll remember this, I’ll know that. I won’t need to learn this. And then you don’t learn everything you have to*’ (Reflection with students, 11). The discussed fragment shows that the created learning situation was favourable for her to learn in her own style—through collaborative learning.

Supportive Construction of Knowledge in the General Context of Distance Learning The students’ ability to use mutual support to construct a common understanding is one of the most relevant abilities of expert learners. During contact learning, the teachers frequently used pair or group work for information searching or its reorganisation. However, the conditions of distance learning created a serious barrier. The appointment of a supportive learning companion was one of the ways discovered by the English teacher for co-constructing knowledge. Teacher Alma suggested completing an English vocabulary exercise in which the students were required to choose a word to describe a given headword (noun) according to its meaning. It was explained to the students that this was pair work. One of them would try to choose the appropriate word or phrase, whereas the other would observe whether the task was completed properly. The first learner was allowed to ask their partner for help at any time. However, assistance might not be needed if the first student managed to solve the assignment independently.

The assigned pair: Justė and her assistant Augustina. Justė chose the correct words: ‘Bright bathroom’. Augustina’s help was not needed. Then, Augustina had to perform the task, and Kotryna had to help her.

Augustina: *Maybe ‘trade world’.*

Teacher Alma: *Possible, but not very good.*

Augustina: *I need help.*

Kotryna: *I ... don’t know.*

Teacher Alma: *What’s the English translation for ‘žinomas pasaulis’?*

Kotryna: *Known world.*

Teacher Alma: *Now, it’s Steponas’ turn. And Tadas is his assistant.*

Steponas: *I’ve written ‘a known fable’. But ‘known’ has already been used.*

Teacher Alma: *What kind of fable is also possible?*

Tadas: *A popular fable.* (Observation, 27)

Working in pairs, students feel safer and know that they may get support if needed. They share responsibility. The learning companion, who is assigned to provide help, is attentive, listens to the choice of the first student and hurries to provide help if necessary. Students find themselves in a dual position—of one who can ask for help and one who can provide it (i.e. an expert). Such a kind of scaffold, according to the teachers, is efficient for all students: ‘*Even the weaker one can help the stronger student. I’ve noticed that it works. You do not necessarily have to group the capable students with the weaker ones. Somewhere an idea comes to the student’s head: “I can. I’m able to”*’ (Reflection with teacher, 27). These scaffolds help

students as expert learners to understand when they reach the limits of their own knowledge and ask for help. Moreover, students learn to assess the correctness of the information provided by others.

Collective Systemisation of Information Seeking as Big a Personal Contribution in the Context of Distance Learning as Possible The goal of the lesson was to systemise students' knowledge of the adverbial participle in the Lithuanian language. Seeking to make students active participants in the lesson and encourage them to present information themselves, the teacher suggested playing the game 'Totalizator'. The whole class, as one team, was asked to present all the information about the formation and usage of the adverbial participle. However, personal contributions were also taken into consideration—pluses were written for correct answers, and it was possible for a holder of five pluses to get ten points. This activity required the following cognitive strategies of the expert learner: to remember what they knew about the adverbial participle and communicate this information out loud; to keep in mind that the repetition of information could earn a student a minus; when the majority of the information was given, to think about what was left unmentioned. The students were very active.

Tadas and Gritė said together: *They have tenses.*

Teacher Goda: *The correct answer is assigned to Tadas and Gritė. You get a plus each.*

Ieva: *It has suffixes.*

Teacher Goda: *Can you specify what suffixes it possesses?*

Ieva: *They are the same as those of the half-participle, -ant and -us.*

Teacher Goda: *Correct, only these two, right? The soft sign can be added.*

A short pause. The students are thinking. Teacher Goda: *Who else knows something about adverbial participles?*

Sofija: *It is not declined and conjugated. ... It only has a tense form, nothing else.*
(Observation, 28)

At the end of 'Totalizator', the teacher revealed the summarised table of adverbial participle formation and usage. The students had the opportunity to see that joint efforts enabled them to systemise all the information on adverbial participles and feel like real expert learners. In a way, the principles of 'Totalizator' turned learning upside down—it was not the teacher who presented the systemised information but the students, who remembered, thought over and systemised this information together (the teacher scored the students' answers, made minor specifications and asked questions to stimulate thinking wrong answers over). The game encouraged students' thinking, activity and attention concentration and proves that, under conditions of distance learning, teamwork, when the common goal is set for the whole class, is also possible. On the other hand, a limitation of distance learning on the learning platforms was that it was impossible to group students into sub-groups to communicate with each other. In Lithuania, this technical problem was addressed only after the research was conducted.

7.5 Overcoming Learning Barriers While Becoming a Knowledgeable and Resourceful Student

During the research, the learning barriers encountered by Maikas and Timotiejus became particularly apparent. It was noticed that these two students encountered problems related to information perception and processing.

Maikas lives in a family where only Russian is spoken. However, his family decided that the boy had to attend a kindergarten with Lithuanian as the language of instruction and later a Lithuanian school. The boy learnt the Lithuanian colloquial language very quickly and is able to use it very well but learning of Lithuanian and the English language in particular, causes difficulties to him. Teachers see bilingualism as one of the essential reasons for the learning problems faced by this student.

Timotiejus, just like Maikas, encounters problems related to the use of language. However, the reason for his problem is hearing impairment, which is compensated for by a cochlear implant. Although the report on the standardised assessment of special educational needs emphasises that Timotiejus is characterised by good concentration, visual discrimination and persistence in attaining results, his learning is impeded by a low level of vocabulary understanding, verbal awareness and difficulties seeking to express abstract ideas in words. His language is grammatically incorrect.

Expressing Identification of a Favourable Learning Method and Its Application While Overcoming Educational Barriers While planning education, the teachers who apply the UDL approach foresee possible barriers and plan ways of coping with them in a targeted way. Classical scaffolds for removing barriers to listening and language perception are related to presenting information through visual, tactile, and other sensory modality channels. Means, ways and assignments of various types that target thinking and creative application of knowledge in various contexts are of particular importance to language comprehension and memorisation.

Selective perception, which emerged during this research, refers to the student's ability to adapt to the current situation. Modelling the attitude towards one's own learning enables the student to access the information that is available to him/her at this particular moment.

At the beginning of the observed English lesson, the students revised the spelling of verbs and wrote down some examples. Later, the whole lesson aimed at the analysis of formal and informal letter writing. While analysing this topic, the written texts were used and teacher-pupils discussion was held. Although the written texts were assigned through methods that complied with the needs of Timotiejus, the language used during the lesson created a serious obstacle for him due to its complexity. The material used for revision of grammatical forms and a way of learning that is convenient to him (combination of commenting and writing down) allowed him to understand and memorise information. Despite the fact that the spelling of verbs was revised shortly at the beginning of the lesson, Timotiejus emphasised this aspect as an outcome of his activity after the lesson was completed.

Timotiejus: *I remember writing verbs -ing and to.* (Observation, 3).

This evidences the relevance of scaffold versatility and concern for student's needs, which can be achieved with the help of student's reflection on own learning. It is obvious that a classic scaffold (visualisation, in this case) is not always a sufficient method for understanding basic information. Although the student, who perceives his or her own learning activity and possesses a positive attitude towards learning, is able to use at least part of the information accessible to him or her, selective perception of information creates considerable gaps in the process of the student's learning.

In the meantime, by employing his/her ingenuity and creative powers, the teacher can constantly saturate the daily leadership of the educational process with scaffolds that enhance understanding and memorising. For example, vivid linguistic expressions may be related to content meanings in a targeted way:

Teacher Alma: *If the action – zap! - happened one time. What tense do we use?*

Gritė: *Past Simple.*

Teacher A: *If we want to say that something happened at indefinite time in the past (she says slowly and prolongs the words), we will use Past Continuous.* (Observation, 24).

Emotional and meaningful expression during dialogue with students helps to attract their attention and, observing the teacher's emotion, allows them to link the rhythm of language and time flow and to differentiate the meanings of discussed grammatical forms of verbs.

Confidence-Based Collaborative Environment in the Processes of Overcoming Barriers The application of UDL in the process of learning encourages the creation of relations that are based on confidence and mutual support. Such relationships enhance the equal participation of all students and become a scaffold for the perception and application of knowledge. The research results revealed that the freedom of thought expression of a student with special educational needs is strongly influenced by a clear feeling of interpersonal confidence, which neutralises the fear of making mistakes and ensures the status of a full member.

UDL embraces the possibility of employing different ways for a collaborating student to receive and share necessary information with others. The tasks that are integrated into the contexts close to the students enable their understanding of knowledge adaptability and its free use.

In the observed lesson, the Lithuanian teacher used the method 'Carrousel' to consolidate the students' knowledge of active participles. The students formed teams of four members. Each team sits at separate desks. Different tasks oriented towards the lesson goal are put on every desk. The tasks are performed in stages. A leader is appointed for every stage. In such a way, every student is provided with opportunities to be a leader of learning activity. Five minutes were assigned to one task. After five minutes, the teams write down an evaluation of the work of the leader and the whole team on the instruction sheet and change their place sitting down to another desk to perform another task.

Vaida is the leader of the first assignment in Tomotiejus' team. Tomotiejus is the leader of the last stage of assignment. The students at the first desk clarified the suffixes of the participles and searched for information in the textbook. Timotiejus does not express his opinion. He joins the team, only providing feedback on their work. The team moves to another desk. The leader of the stage changes, and Marija becomes one this time. She encourages Timotiejus to engage in the activity.

Marija: *Timotiejus, help us, too. How do passives look to you?*

Timotiejus: *These are passives.*

Timotiejus expresses his opinion and divides participles into active and passive ones, showing where they have to be written down. When teams move to another desk, the task is to create an advertising slogan using passive participles.

Vaida: *We want to create a slogan about shampoo ..., it washes your hair well and is easily rinsable.*

Timotiejus hardly joins this creative activity but he reads the text. When the team moves to one more desk, Timotiejus becomes the leader of the assignment to demonstrate passive participles.

Timotiejus: *Do we have to act now?* – he double-checks, asking the teacher.

Marija: *Now you will have to act.*

Timotiejus: *All right, I'll do it.*

The brainstorming of ideas for performing is held.

Timotiejus: *Is frying, fried.*

This suggestion is not correct.

The girls change it to: *Frying omelette ... You have to use a passive participle.*

The students further elaborate on the idea and find a correct form of the participle: *Fried omelette* [the omelette which is being fried at the moment].

The teacher joins the discussion.

Teacher Goda: *And how can you show fried omelette?*

Timotiejus is very active in thinking of how to realise this idea that all thought of and eagerly plays it. (Observation, 9).

Upon completion, the students evaluated the lesson as very efficient. In this case, all the students were offered one method 'Carousel'. However, its implementation is grounded in various components that align with students' needs. Equivalent motivating status in the team, when each member assumes delegated responsibility (each member is the leader of stage and participants) equally, enhances their self-esteem and interpersonal trust. In this particular case, a student with language perception difficulties received numerous remarks from his peers, but he felt as an equal learning partner, not experiencing the status of the weaker. Even when he made an obvious mistake suggesting verbs 'is frying, fried' instead of the required participle, in the situation of the search for ideas, it became an excellent way for him to follow the logic of the thought, changing the verb to get the forms of participles they were analysing 'is frying, fried > frying > fried'.

Using the usual learning aids, such as textbooks, internet on the phone, material prepared by the teacher and knowledge of other learners, conditions are created to employ senses of different modalities analysing and perceiving information, such as sight (while reading), hearing (while listening) and kinaesthetic (while acting) ones. The students adapt to every single case, perceiving, processing, and expressing their knowledge (it is difficult for Timotiejus to create a slogan because it requires

complex linguistic constructions, but he looks into it while reading the outcome of their joint activity to himself and others).

A possibility of changing the sitting position and moving from one desk to another not only encourages students to keep track of time while working (pupils change every five minutes) but also increases the possibility of hearing and comprehending information. The students evaluated this lesson very well not only because they were provided with numerous occasions to deeply understand the essence of the analysed phenomenon, but also due to the experienced joy of learning.

Collaboration consistently coordinated by the teacher can serve as a scaffold for coping with a learning problem. Having created collaborating groups or pairs, the teacher foresees tasks for certain pairs and thus creates conditions for perception and ensures the prevention of failure.

Teacher Alma: *Sofija and Timotiejus are now going to answer together.*

Sofija (one of the smartest students) clarifies in Lithuanian that this sport is played in teams.

Teacher Alma: *Timotiejus, do you know any kinds of sports that are played in teams? Do you know anything else?*

Maikas suggests his variant.

Timotiejus: *Then, baseball.*

Teacher Alma: *Now Sofija, together with Timotiejus, is trying to think of the sixth question.*

Sofija formulated a question.

Teacher Alma: *Timotiejus, do you agree?*

Timotiejus: *Yes, sure* (he answers in English). (Observation, 29)

It is obvious that the collaborative situation allows for creating conditions for providing assistance to the weaker student without putting emphasis on differences in his/her skill level but assigning tasks accordingly. One of the academically strongest students and the one facing difficulties perform the same role, but in this case, the assignment is more favourable to the weaker learner. Being interested in sports, the boy immediately thinks of the answer and presents it in English. Meanwhile, the assignment, which requires thought modelling and its expression, is given to both learners, foreseeing that sharing ideas will play a significant role of scaffolding. When Sofija formulated the question, Timotiejus only had to think it over and approve or disapprove of it. The smooth completion of assignments is enhanced by the teacher's and students' inserts in Lithuanian. This information in Lithuanian serves Timotiejus and other students as scaffolds for a better understanding of used vocabulary as well as the content of assignment and implemented activities.

Student-to-student support and the role of support provider assigned to a student, who regularly encounters learning difficulties, enhances his/her self-confidence and activates responsibility for correct decisions while completing the task, not only from his/her own perspective but also from that of the friend s/he acts with.

Teacher Alma: *Timotiejus, can you start now? Maikas, can you be a helper?*

Maikas: *Well, I'll try, I'll try.* (Observation, 30)

The assignment that expresses the teacher's confidence helps the student, who experiences attention management problems and constantly seeks acknowledgement and social relations with others, mobilise inner powers for targeted information processing. According to the teacher, peer support performs two important

roles in the process of becoming expert learners. On the one hand, this is a very efficient way to overcome learning barriers in individual relations; on the other hand, it identifies one's own inclinations and enhances social relations.

Teacher Alma: *But you sometimes see that in this particular topic, for example, Jonas can help Timotiejus a lot because he is able to explain in a structured way. He has a gift of teaching. He really enjoys explaining something to his friends. And when you hear Timotiejus speak in Jonas's sentences, which are more fluent and richer, you understand that collaboration succeeded.* (Reflection with teacher, 30).

Situations of students' collaboration establish social links and influence the development of self-control skills. Favourable emotional background in a supportive learning environment enhances volitional and perseverance powers. Even in the cases, when academically challenging the content of the lesson as if provokes a retreat, the student finds internal powers for volitional concentration on cognition and participation. During the distance lesson, *'Maikas stands up, sits down, goes somewhere away and then immediately returns back'*. (Observation, 25). It is obvious that overcoming barriers associated with social relations tends to strengthen not only cognitive processes, but also those of self-control while learning.

It should be considered that the phenomenon of support during collaborative learning is a highly sensitive issue related to students' self-esteem. The support provided by the teacher and students is approached differently by the receiver.

The researcher: *When you were standing in the circle and the children asked you questions, did you understand all the questions?*

Timotiejus: *The teacher helped me and explained it to me.*

The researcher: *Did you feel good when the teacher explained it to you?*

Timotiejus: *Yes.*

In relation with peers, he acknowledges the support from friends, but he also tries to emphasise his equal relation with peers and his contribution.

Timotiejus: *...when Jonas helped me ... friends help me ... We discussed a little bit and thought together, which word to write there ... We helped each other.* (Reflection with student, 6).

The results of this research show that direct support to a student in the presence of other students can be relevant to a learner. It does not embarrass this learner because not understanding something is perceived as a natural phenomenon and the applied solution to this problem is the teacher's support. The student evaluates help from peers differently. The learner accepts and appreciates it but assigns it to a certain form of collaboration, because accepting this support means accepting the role of the weaker. To avoid this, the student is sensitively concerned about his equal status and emphasises his own help to his friend.

When learners' physical and cognitive capacities differ, equal relations are grounded on two conditions: (1) educational activities are equally accessible to all learners; (2) a phenomenon of support is treated as a natural part of the educational process without any negative connotation.

Expression of Latent Barriers in Cognitive Processes The beginning of the third cycle of action research was marked by new external challenges caused by the COVID-19 pandemic. After the universal quarantine was introduced, schools in

Lithuania were closed, and distance learning started. This new learning experience became a challenge to students as well as teachers. However, researchers' observations of online lessons and discussions with teachers allowed the revelation of the existence of latent barriers. Such latent barriers divert the teacher's attention to their consequences and prevent them from identifying the real essence of a student's failure.

Assigning learning barriers to social circumstances is a frequent characteristic of wrong decisions. When distance lessons started, Maikas and Timotiejus demonstrated signs of passive participation. They joined the lessons but did not show any signs of active involvement and were hiding their faces behind profile pictures. Maikas hid himself behind Hitler's face, whereas Timotiejus' profile had a picture of loudly screaming Trump. Such masking of students is a signal to the teachers about their wellbeing. The teacher and the researchers held reflections after each observed lesson. Such a position of learners was considered a sign to conduct a deeper analysis of the nature of possible barriers and variants of eliminating them. During the lessons observed earlier, it was noticed that after the public failure, Maikas starts behaving in a destructive way but does not withdraw from the learning process.

Researcher: I've noticed that Maikas possesses a lot of leader's qualities. Maikas' character is his strength. However, he cannot cope with a failure or defeat, and that is why he just confines himself or starts behaving bad. ... Perhaps he is also afraid of publicity. Maikas clearly demonstrated that. The teacher asked, he disconnected and then connected again. (Reflection with teacher, 25).

The student's behaviour demonstrates the fight between the character's expression and his wellbeing. His character encourages active engagement during lessons and a wish to learn together with others, but his fear of public failure is likely to create certain barriers. External identification with Hitler, a strong but universally condemned personality, allows him to draw attention to himself and express his resistance to the situation that suppresses him. Meanwhile, the teacher focuses more on external reasons and thinks that they can account for Maikas' avoiding learning without linking it with learning barriers.

Teacher Alma: It would be simpler if the parents hadn't sent him to a Lithuanian school because he constantly protests against Lithuanianess.

Researcher: English is not Lithuanianess. He wants to be a leader, but he doesn't succeed and then, knowing more about Russia, he tosses related phrases. With his character, it is important to show niches for his leadership. (Reflection with teacher, 25).

The analysis of the situation confirms the link between the educational environment and the use of student's learning powers. Limiting possibilities for student's self-expression, the environment inhibits prerequisites for student's cognitive activities and evokes his/her non-traditional behaviour, which complicates the search for educational solutions while creating learning scaffolds.

The situation of Timotiejus is different. The reason for his learning problems is obvious—limited language comprehension due to impaired hearing. However, the problems of active participation in lessons are very similar to Maikas, the student

discussed above. Social reasons are emphasised during the reflection with the researchers, and in this case by the teacher.

Teacher Alma: *In his family, they communicate with Timotiejus via SMS because it is more convenient to him. Then, how does his language develop?*

Researcher: *Mom thinks that she answers the child's needs, but she doesn't realise that it impedes her child's language development.*

Teacher Alma: *Then it is clear to me why his Lithuanian isn't developing, not to speak of English.*

Researcher: *It is important to provide him with knowledge during lessons. He is hiding behind Trump, Superman. He suffers from inferiority.*

Teacher Alma: *No one bullies him in the class. If there is such an attitude in the family, then it's a situation without a solution. His mother doesn't target his higher academic achievements. (Reflection with teacher, 26).*

Hardly understandable behaviour of the students encourages teachers to retreat, seeking to share responsibility with other participants in education, that is, with the students' families. However, the results of the observation evidence problems with the learner's wellbeing, which not only limits his language development but also hinders his participation in cognitive processes. The discussed behaviour of Tomotiejus' mother could be considered a suggestion to increase accessibility of information for this student.

Scaffolds for coping with latent barriers encourage a teacher to flexibly change decisions, directing scaffolds to the identified causes. After the comprehensive analysis of students' behaviour, the teacher attempts to create conditions for students' successful learning experience. The teacher used Maikas' character features as scaffolds for strengthening his language perception. His wish to be noticed is constantly enhanced by allocating attention to him, talking to him and inviting him to be a teacher's colleague.

Teacher Alma: *Maikas, can you help me? Choose one year, and say it. (The teacher assigns the task in English).*

Maikas: *Shall I choose one year? (He clarifies the task in Lithuanian and says the year in English).*

Teacher Alma: *Ok. Last time we revised that we say the year as two numbers.*

Maikas: *Oh, as two numbers. (Maikas corrects himself). (Observation, 34)*

The teacher constantly uses similar methods, demonstrates confidence in the student and assigns the tasks that the student is able to cope with. The student's emotional state and self-expression enhance his self-esteem, promote concentration of attention, and search for forms of comprehension favourable to him. Maikas offers to do the assignment first all the time; when something is not clear, he bravely asks the teacher. The teacher does not avoid emphasising his success and praising him. The main obstacle, that is, avoidance of participating in the process of learning, has been overcome. The changes in the emotional state are confirmed by some decorative elements on his screen—merry animated children's pictures. During the remaining period of observation, Maikas participated in the lesson, always connecting properly. He did not use any means to attract attention, but bravely clarified all the unclear things.

Timotiejus still does not do his homework, hides behind different backgrounds, and hardly talks during lessons. Being asked directly by the teacher, he provides abstract answers unrelated to the analysed topic. It is obvious that the student does not understand what is being analysed during the lessons. The teacher asks Timotiejus to stay after the lesson to talk with him about his future learning. Timotiejus does what he is asked to.

Teacher Alma: *Timotiejus, can you switch on the sound? Don't you have the camera?*

Timotiejus: *No, I don't.*

Teacher Alma: *I only see your knight's armour. I don't have your story or separate words. What has happened to you?*

Timotiejus: *I don't know, it's slightly complicated for me to find out.*

Teacher Alma: *Yes, but you have to try. Now, look. I'll show to you how to work with that ... Have you seen this one?*

Timotiejus: *I don't know, oh, I don't know.*

The teacher keeps opening one assignment after another and explains to the student how to complete them.

Timotiejus: *Oh, this one. Yes, I know it, but I haven't done it yet.* (Observation, 23).

The teacher explains every task separately. She receives the promise from Timotiejus that he will do all the assignments, but the teacher is not sure if this conversation is fruitful, because it is not the first attempt to provide individual consultations to him. During the reflection of the researchers and the teacher, organising meetings with the student before the lesson to explain the main concepts was suggested, which will be used soon, as well as problems, which will be analysed during the lesson. It was also recommended that Maikas is invited to the meeting, as he exhibits similar problems. The teacher agrees with this. During the discussion, there appear to be some doubts if the student knows how to use the online learning platform employed during lessons. However, the teacher ensures that the platform is used for the organisation of all the lessons. Before the start of distance learning, the school organised special training courses to all the students and explained the rules of using 'Google Classroom'.

The teacher invited three students, including Timotiejus, to a morning consultation. However, before the lesson, Timotiejus did not connect. During the reflection of the researchers and the teacher, it was assumed that not only the lack of skills but also his well-being became learning barriers for Timotiejus. Seeking to encourage the student, the use of a mediator was decided. One of the researchers wrote a letter to Timotiejus, where she expressed confidence in him, understanding of the situation he is in now, and invited him for an open reflection about the encountered difficulties. After the lesson, the teacher invites Timotiejus for a conversation about the possible ways of helping him.

Teacher Alma: *Can we see your face instead of this politician? ... Oh, ok. Now it better.*

Teacher Alma: *Timotiejus, what problems do you face, what is complicated to you while doing homework?*

Timotiejus: *I don't manage to do it. You assign too much homework. I don't manage on time. One day I do homework, then I don't manage to do, then again.* (Observation, 23)

The teacher opens 'Google Classroom', and showing specific assignments, demonstrates the tools that can facilitate completion of these assignments. Timotiejus

claims that he sees a totally different view on his screen and does not have such tools at all. It turns out that the student does not possess sufficient knowledge of the main learning platform. It is obvious that scaffolds for eliminating barriers of language comprehension, which were not provided on time, resulted in the emergence of other barriers, which affect not only understanding of knowledge but also the student's self-esteem. Solving the basic problem of managing learning tools, the student's situation started to change slowly. The support provided to gain basic skills not only opens paths for cognition but also promotes the expression of the student's strong personal qualities. Timotiejus' retreat and withdrawal have been replaced by his determination to seek results, good concentration, and thinking.

Teacher Goda: I appreciate the children's initiative. Timotiejus chose such a complex grammatical form. I think: "You are entering such a difficult fight". But he analyses and thinks together with other children. (Reflection with teacher, 37).

The identified latent causes of barriers and reactions to them not only eliminate their direct consequences but also activate the student's inner powers, possess knowledge and create favourable conditions for discovering ways to overcome the lack of certain qualities and increase the teacher's self-confidence and trust in the student.

Teacher's Dispositions, Barriers and Directions for Their Overcoming The teacher's dispositions are formed not only by the inner experiences of the student and the teacher but also by the conditions within the educational environment. The national, regional or school policy and the requirements imposed on learning outcomes can become a serious obstacle for building up an inclusive disposition of teacher. The teacher considers the priorities of the whole educational system and the prevailing forms of education.

Emphasis on school prestige and academic results in the community, as well as school ratings based on academic achievements, enhance and highlight differences in students with learning difficulties. The anxiety about the possibility of successful education of students with learning difficulties without worsening the general academic results of school and those of gifted students disturbs the teacher's disposition.

Teacher Goda: The results of international surveys (TIMS and others) show that our school exceeds the national average, and we want to retain this level. The entrance exams to the lyceum will come, and it will be of importance to 8th graders. (Reflection with researchers, 36)

After basic school, students will pursue education in gymnasiums. Therefore, requirements and ways of education that prevail in gymnasiums make up a relevant criterion for teachers while modelling education in their classes. The load that is hard to cope with hinders students' efforts to search for knowledge and creates new models. The teachers' ideas while planning the education that enables a student to become an expert are also obstructed.

The anxiety regarding compatibility of possibilities for students with different capabilities while striving for successful education of every learner and focusing on separate groups of students promotes teachers' empathy. However, the question

emerges of how to ensure enough time and space for search, cognition, and development of the learning powers of gifted and less gifted students.

Teacher Alma: *It is difficult for them in this class because there are many smart students, 'nuggets', and it is complicated for the boys to show themselves.*

Teacher Goda: *It is a very creative class. When you give a possibility, they open up wide. I cannot finish the course of folk songs, which was supposed to be boring. Now they are singing with scenography.* (Reflection with researchers, 36).

Although creative activities establish conditions for each student to reveal their own individual powers, the environment, which allows for their demonstration, is very important. The learners' ability to share roles and to attain common goals are of crucial importance in establishing learning opportunities for learners with special needs. It is natural that dissimilar powers of students' engagement predetermine the different expressions of jointly pursued results. While evaluating the result, the dilemma over the application of standardised criteria-based reference points is confronted. If they are applied, students with learning difficulties are prevented from getting a high mark. However, another dilemma regarding justice to all students in the educational process arises if the teacher does not introduce the standards. It is obvious that facing the students' diversity, the teacher also encounters his/her internal attitudinal barriers, which may also build barriers for students.

Teacher Goda: *Timotiejus didn't sing either, though he has a very strong beautiful voice. Do I have to press Timotiejus?*

Researcher: *Sometimes alternatives are needed. If I had to stand in front of the class and sing, I wouldn't sing because I would be afraid to make a fool of myself. They also need alternatives: to sing, to read poetry, to record singing at home and play it during the lesson, or to replace a practical assignment with a theoretical one.*

Teacher Goda: *Timotiejus sings. Then what about the learners in the class? Won't they be embarrassed?*

Researcher: *Well, we are learning to use alternatives. We should speak more with the children about it.* (Reflection with teacher, 14).

Reflection on the educational process is one of the most significant components of UDL approach. This component is also of utmost importance when building up the teacher's disposition. The research results show that open, collegial collaboration of teachers in the stages of forming inclusive experience of teacher who employs the UDL approach allows verifying own decisions, finding appropriate interpretations of situations, and is a relevant indirect scaffold for teacher to overcome barriers and change his/her disposition.

The teacher's disposition that supports a student comprises an important scaffold for compensating for external circumstances. During the action research, the teachers' disposition that accepts the students' diversity developed. It allows finding ways to create a barrier-free environment, thus providing all the students with conditions to reveal their personalities and, without violating the principle of justice, makes it possible to implement the principle of non-discrimination in education. The teacher's disposition that is based on trust in students creates a collaborating teacher–pupil relationship, which is very important for enhancing student's self-confidence while pursuing the best academic result. The support clearly expressed by the teacher significantly contributes to the maintenance of this relationship.

In the collaborative relation, even an inappropriately and irresponsibly completed assignment can be turned into a learning-to-learn tool, which helps a student to bravely and responsibly model information, not to be afraid of own mistakes and to learn from them.

Teacher Alma to Maikas: *You've been very actively engaged in our activities and it makes me very happy. You also have been doing various artistic things but if you could improve one of your works....* (she gives the exact name of work).

Maikas: *Mhh* (without enthusiasm).

Teacher Alma: *I have a copy paste variant. It isn't yours... Have one more look at and correct it according to requirements so that I could evaluate it. Is it ok?*

Maikas: *Good* (with enthusiasm).

Teacher Alma: *Do you any questions?*

Maikas: *No* (he answers in English and says goodbye to the teacher in a polite and vigorous way). (Observation, 37)

The confidence in the student expressed by the teacher and the suggestion of a specific tool for improving the completed work instead of emphasising his unwillingness to learn directs the student towards pursuance of the correct result, which is attained through conscious knowledge analysis and its modelling. The student's success achieved in the collaborative relationship is a strong catalyser for the student's cognitive activity and for the enhancement of the teacher's inclusive competences. For the teacher, who tends to constantly reflect on his or her own activity and to develop an expert learner, finding the answer to the question 'How does the student learn?' is as important as answering the question 'What has the student learnt?'

The supportive/scaffolding targeted and constantly reflected teacher–student relationship becomes a relevant marker in the process of successful learning. The analysis of barriers to information processing and its use, which are faced by two learners with more serious learning peculiarities compared to others, confirms the key principle of UDL that barriers to learning, which promote the student's becoming an expert learner, lie in education organisation decisions, curricular and aids rather than in individual differences of learners (Meyer et al., 2014). The results of the analysis also confirm the conclusion of Meier and Rossi (2020) that individual barriers tend to decrease by themselves after skill and curricular barriers are eliminated.

7.6 Discussion and Conclusions: Links of Inclusive Education Factors to Resourceful and Knowledgeable Learners

The results of the action research allowed us to conclude that while educating a resourceful and knowledgeable student, the teacher also thinks about the students' learning and, on this basis, plans, and organises the process of inclusive education. The teacher's belief that every student can become an expert learner in information perception, use of language and symbols, information comprehension, as well as

the learning process organised in a targeted way creates conditions for expression and development of qualities and abilities assigned to expert learners. Significant changes in the student's becoming an expert learner have influence on the teacher's disposition—she or he increasingly believes that every student, even with SEN, can become an expert in information perception, reorganisation and comprehension. The research results show that application of the UDL approach facilitates development of practices that help teachers to increase opportunities for all students (including those with SEN) to become learning experts, that is, actively perceiving learners who construct their own deep comprehension, are self-directed, and are ready to create and co-create their knowledge. Improving their learning expert abilities, students more actively engage in the process of co-learning and experience greater learning success. Thus, application of the UDL approach increases the quality of inclusion for all.

The analysis of lesson observation and reflections of students, teachers and researchers disclosed the qualities and abilities of students as expert learners manifested and improved and what inclusive educational practices became a favourable context for their development. The generalised results of action research on the student's becoming an expert learner applying the UDL approach are presented in Fig. 7.4.

Organising inclusive education within the UDL approach and under conditions of students' constant reflection on their own learning process, their ability to choose and employ the information of the most favourable modality for their perception became more and more visible. The significance of emotional background for an in-depth understanding of new information, formation of cognitive relations and attainment of learning success became particularly apparent. The data obtained in the research conducted in another area by García-Campos et al. (2020) also confirmed the importance of emotional background and emphasised the influence of emotion-based choices on the efficiency of executive functions. Our research results added new data to the knowledge that a favourable emotional inclusive learning background stimulates students' ability to understand how an emotional inclusive background helps them think and manage processes of their own perception and change behaviour while learning. The obtained data confirm the theoretical assumptions of Mayer et al. (2011) that emotions can be assimilated to thinking, prioritising efficient ways of thinking and relying on reasoning.

According to the data of our research, the construction of students' deep understanding was encouraged by applying various thinking tools, knowledge organisers, additional support methods, procedural steps and deep scaffolding strategies. This encouraged every student, including the one with SEN, to approach newly received information from different perspectives, to use different ways to reorganise, systemise new and already possessed information and to envisage meanings and essential ideas. Some research also shows that authentic instruction, including personally and socially meaningful contexts (Preus, 2012; Gronseth et al., 2020) and sharing thoughts with peers while discussing (Moore et al., 2020), encourages SEN students to construct their deeper knowledge. Applying the UDL approach, it is possible to

Fig. 7.4 Interaction of inclusion-increasing factors of the student's becoming resourceful and knowledgeable when applying the UDL strategy

include all the ways that contribute to the efficient construction of students' deep understanding.

Our research substantiated that UDL-based education, which enabled the teacher to assume the roles of moderator and facilitator, promoted students' self-directing learning. The students took the initiative to clarify new information, demonstrating responsibility for their own learning and applied and reflected cognitive processes, which helped to better understand the learnt material. Our research results, similar to those reported by Raley et al. (2018), show that even students suffering from learning disorders can acquire skills of self-directed learning in an appropriately created context. Although in the action research the teachers did not specially teach skills of self-directed learning to their students as it was done by Raley et al. (2018), consistent reflection on their own learning goals, process and outcomes enabled the students to improve these skills. This insight is confirmed by the conclusion of Schweder's (2020) research that learning in a student-centred educational environment encourages self-directed behaviour, use of self-control strategies and larger effort investment.

Another result of our research revealed the processes of collective comprehension in the context of collaborative learning. We established that in supportive collaborative inclusive activities, the strong qualities of each participant are employed to create collective understanding and common knowledge, thus enriching collective understanding. The cycle of improvement in the situation of collaborative learning suggested by Fisher et al. (2020) starts with improvement of individual abilities, ends with improvement of group skills, and then moves to individual skills again. Morocco et al. (2001) emphasised the importance of SEN student's engagement in discussions with classmates, and Moore et al. (2020) affirmed their use of comprehension strategies through peer-mediated collaborative groups. Our research shows that processes of creating collective understanding in heterogeneous groups can be strengthened when favourable inclusive educational conditions are created, for example, by using the UDL approach.

The results revealed the educational barriers that prevent students from full participation in the educational process and the development of abilities assigned to an expert learner. Meyer et al. (2014), Zhong (2012) and Meier and Rossi (2020) emphasised an unfavourable educational environment, limitations of accessibility to curriculum, lack of learning skills among students and their personal qualities as a reason for the emergence of such barriers. Our research revealed the barriers impeding the formation of teachers' dispositions that are open to the students' diversity. According to Barnes (2019) and Weiss et al. (2019), such disposition is essential for establishing an inclusive community of students and teaching the study subject. Our research allowed us to identify the tension between the child-centred disposition of teachers and loyalty to the educational system, which focuses on quality based on standardised students' achievements. This tension blocks inclusive values of teachers: belief in every students' possibilities (Nieminen & Pesonen, 2020) and consideration of students' diversity while modelling education (Van Boxtel & Sugita, 2019). The limiting impact of focus on standardised achievements observed in

inclusive activities of teachers is also confirmed by the results of previous studies (Florian et al., 2016; Farrell et al., 2007).

The results of our research highlighted the elements of teachers' actions and students' self-efficacy that are of significance in coping with learning barriers. The phenomenon of selective information perception in the process of overcoming learning barriers can be explained through the intrinsic motivation and mastery of students in the context of self-directed learning (Ryan & Deci, 2020). The barrier of language comprehension predetermined by hearing impairment was lowered by the student's awareness of the learning methods that were favourable to him and his motivation to participate. 'Picking' the information from the complex flow of speech that was accessible to him, the student failed to eliminate the learning barrier but was partially able to pursue the learning goal. The teacher's competence to differentiate education is essential while establishing a barrier-free environment for all students (Griful-Freixenet et al., 2020). The results of our research show that the forms of education differentiation may take diverse forms. Teachers who allow students to naturally engage in the process of education are particularly efficient with universal educational methods. For example, when a student discovers a favourable method of learning, such a teacher uses interpersonal support, but the components of education differentiation do not single such a student from the general learning experience. The teacher's disposition that creates an equal collaboration relation with the student and reflective experiences with colleagues in the processing of barrier overcoming supplements the insights of Farmer et al. (2018) about social ecology, which enhances socio-educational relations and is created by 'an invisible teacher's hand'.

The results of the action research showed that teachers' beliefs were built up to acknowledge that every student could become an expert learner within the limits of their own possibilities. During the reflection on the research results, Teacher Alma stated that: 'Development of expert learner is Earlier we used to call such children the gifted or bookworms. And now... Maikas can become an expert. It turns out that Timotiejus can also be an expert within the limits of his own possibilities'.

References

- Asikainen, H., & Gijbels, D. (2017). Do students develop towards more deep approaches to learning during studies? A systematic review on the development of students' deep and surface approaches to learning in higher education. *Educational Psychology Review*, 29, 205–234. <https://doi.org/10.1007/s10648-017-9406-6>.
- Barnes, J. M. (2019). Teachers' values: An international study of what sustains a fulfilling life in education. *Journal of Education and Training Studies*, 7(5), 1–18.
- Brans, C. N. (2014). Strategies for developing a deep approach of learning in higher education. *Journal Plus Education*, 11(2), 130–140.
- Brand, S. T., & Dalton, E. M. (2012). Universal design for learning: Cognitive theory into practice for facilitating comprehension in early literacy. *Forum On Public Policy Online*, 2012 (1). Oxford Round Table.
- Braun, V., & Clarke, V. (2017). Thematic analysis. *The Journal of Positive Psychology*, 12(30), 297–298.

- Charalampous, C., & Papademetriou, C. (2019). Action research: The key to inclusive education in Cyprus. *Sciend. Journal of Pedagogy*, 10(2), 37–64. <https://doi.org/10.2478/jped-2019-0006>.
- Cohen, L., Manion, L., & Morrison, K. (2013). *Research methods in education*. Routledge.
- Cohn, N. (2020). Visual narrative comprehension: Universal or not? *Psychonomic Bulletin & Review*, 27(2), 266–285.
- Degutytė-Kančauskienė, A. (2020). Mokėjimo mokytis kompetencijos aktualizavimo tyrimas chemijos pamokose [Investigation of actualization of learning to learn competence in chemistry classes]. *Acta paedagogica Vilnensia*, 44, 129–140. <https://doi.org/10.15388/ActPaed.44.9>.
- Farmer, T. W., Dawes, M., Hamm, J. V., Lee, D., Mehtaji, M., Hoffman, A. S., & Brooks, D. S. (2018). Classroom social dynamics management: Why the invisible hand of the teacher matters for special education. *Remedial and Special Education*, 39(3), 177–192.
- Farrell, P., Dyson, A., Polat, F., Huthcheson, G., & Gallannaugh, F. (2007). Inclusion and achievement in mainstream schools. *European Journal of Special Needs Education*, 22(2), 131–145. <https://doi.org/10.1080/08856250701267808>.
- Ferrance, E. (2000). *Action research*. Northeast and Islands regional educational laboratory at Brown University.
- Fisher, D., Frey, N., Almarode, J. (2020). Student learning communities as builders of collective efficacy. *Reading Psychology*, 41(6), 559–582. <https://doi.org/10.1080/02702711.2020.1783139>.
- Florian, L., Black-Hawkins, K., & Rouse, M. (2016). *Achievement and inclusion in schools*. Routledge.
- Galkienė, A. (2017). Transformation of legal basis of the Lithuanian education system towards inclusive education. In A. Galkienė (Ed.), *Inclusion in socio-educational frames: Inclusive school cases in four European countries* (pp. 62–80). The publishing house of the Lithuanian University of Educational Sciences.
- García-Campos, M. D., Canabal, C., & Alba-Pastor, C. (2020). Executive functions in universal design for learning: Moving towards inclusive education. *International Journal of Inclusive Education*, 24(6), 660–674. <https://doi.org/10.1080/13603116.2018.1474955>.
- Golightly, A., & Raath, S. (2015). Problem-based learning to foster deep learning in preservice geography teacher education. *Journal of Geography*, 114, 58–68.
- Gratton, R. (2019). Collaboration in students' learning: The student experience. *Support for Learning*, 34(3), 254–276. <https://doi.org/10.1111/1467-9604.12261>.
- Griful-Freixenet, J., Struyven, K., Vantieghe, W., & Gheysens, E. (2020). Exploring the inter-relationship between Universal design for learning (udl) and differentiated instruction (DI): A systematic review. *Educational Research Review*, 29. <https://doi.org/10.1016/j.edurev.2019.100306>.
- Gronseth, S. L., Michela, E., & Ugwu, L. O. (2020). Designing for diverse learners. In J. K. McDonald & R. E. West (Eds.), *Design for learning: principles, processes, and praxis*. EdTech Books. https://edtechbooks.org/id/designing_for_diverse_learners. Accessed 6 Apr 2021.
- Hartmann, E. (2015). Universal design for learning (UDL) and learners with severe support needs. *International Journal of Whole Schooling*, 11(1), 54–67.
- Houston, L. (2018). Efficient strategies for integrating universal design for learning in the online classroom. *Journal of Educators Online*, 15(3), 3.
- Insuasty, E. A., & Jaime Osorio, M. F. (2020). Transforming pedagogical practices through collaborative work. *Profile: Issues in Teachers' Professional Development*, 22(2), 65–78. <https://doi.org/10.15446/profile.v22n2.80289>.
- Kim, D., Lee, I. H., & Park, J. H. (2019). Latent class analysis of non-formal learners' self-directed learning patterns in open educational resource repositories. *British Journal of Educational Technology*, 50(6), 3420–3436. <https://doi.org/10.1111/bjet.12746>.
- Koc, S. E. (2019). The relationship between emotional intelligence, self-directed learning readiness and achievement. *International Online Journal of Education and Teaching (IOJET)*, 6(3), 678–694. <http://iojet.org/index.php/IOJET/article/view/568>. Accessed 8 May 2020.

- Lasfeto, D. B., & Ulfa, S. (2020). The relationship between self-directed learning and students' social interaction in the online learning environment. *Journal of E-Learning and Knowledge Society*, 16(2), 34–41. <https://doi.org/10.20368/1971-8829/1135078>.
- Maniušis, M. (2018). Mokinių kritinio mąstymo gebėjimų ugdymas su istoriniais šaltiniais Lietuvoje ir užsienyje (Development of students' critical thinking skills in the work with historical sources in Lithuania and abroad). *Istorija: mokslo darbai= History*. Vilnius: Lietuvos edukologijos universitetas, 11(3).
- Marton, F., & Saljo, R. (2008). *Deep and surface approaches to learning*. Sweden: University of Gothenburg.
- Mayer, J. D., Salovey, P., Caruso, D. R., & Cherkasskiy, L. (2011). Chapter 26. Emotional intelligence. In R. Stenberg & S. Kaufman (Eds.), *The handbook of intelligence* (pp. 528–549). Cambridge.
- Meier, B. S., & Rossi, K. A. (2020). Removing instructional barriers with UDL. *Kappa Delta Pi Record*, 56(2), 82–88. <https://doi.org/10.1080/00228958.2020.1729639>.
- Meo, G. (2008). Curriculum planning for all learners: Applying universal design for learning (UDL) to a high school reading comprehension program. *Preventing School Failure: Alternative Education for Children and Youth*, 52(2), 21–30.
- Mertler, C. A. (2019). *Introduction to educational research* (2nd ed.). SAGE Publications.
- Meyer, A., Rose, D. H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. Wakefield MA: CAST.
- Moore, B., Smith, C., Boardman, A., & Ferrell, A. (2020). Using video self-reflection to support collaborative learning for students with learning disabilities. *Teaching Exceptional Children*, 53(1), 52–59. <https://doi.org/10.1177/0040059920901860>.
- Morocco, C. C., Hindin, A., Mata-Aguilar, C., & Clark-chiarelli, N. (2001). Building a deep understanding of literature with middle-grade students with learning disabilities. *Learning Disability Quarterly*, 24, 47–58.
- Nieminen, J. H., & Pesonen, H. V. (2020). Taking universal design back to its roots: Perspectives on accessibility and identity in undergraduate mathematics. *Education Sciences*, 10(1), 12. <https://doi.org/10.3390/educsci10010012>.
- Novak, K. (2016). *UDL NOW! A teacher guide to applying universal design for learning in today's classrooms*. CAST Professional Publishing.
- OECD 2019 Volumes I-III. The programme for international student assessment (PISA) results from PISA 2018. http://www.oecd.org/pisa/publications/PISA2018_CN_LTU.pdf
- Peng, Y. P. M., & Chen, C. C. (2019). The effect of instructor's learning modes on deep approach to student learning and learning outcomes. *Educational Sciences: Theory & Practice*, 19(3), 65–85. <https://doi.org/10.12738/estp.2019.3.005>.
- Poyry-Lassila, P., Annemari Kuhmonen, A., & Paivi Marjanen, P. (2017). TradeAway: Collaborative game design and development as a learning environment. *Academic Conferences and Publishing International Limited, Reading*, 10, 546–553. URN: NBN:fi: amk-201801091149.
- Preus, B. (2012). Authentic instruction for 21st century learning: Higher order thinking in an inclusive school. *American Secondary Education*, 40(3), 59–79.
- Raley, S. K., Shogren, K. A., & McDonald, A. (2018). How to implement the self-determined learning model of instruction in inclusive general education classrooms. *Teaching Exceptional Children*, 51(1), 62–71. <https://doi.org/10.1177/0040059918790236>.
- Rapp, W. (2014). *Universal design for learning in action*. Baltimore MD: Brooks.
- Rosita, T., Alawiyah, T., Rochyadi, E., & Sunardi, S. (2020). Interactive learning media for dyslexic students of elementary school. *PrimaryEdu-Journal of Primary Education*, 4(1), 48–54.
- Rowell, L., Bruce, C., Shosh, J., & Riel, M. (Eds.). (2017). *The Palgrave international handbook of action research*. Palgrave Macmillan. <https://www.amazon.com/Palgrave-International-Handbook-Action-Research/dp/1137441089>. Accessed 12 May 2020.
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, 101860.

- Salleh, U. K. M., Zulnaidi, H., Rahim, S. S. A., Zakaria, A. R., & Hidayat, R. (2019). Roles of self-directed learning and social networking sites in lifelong learning. *International Journal of Instruction*, 12(4), 167–182. <https://doi.org/10.29333/iji.2019.12411a>.
- Samuels-Peretz, D., Dvorkin Camiel, L., Teeley, K., & Banerjee, G. (2017). Digitally inspired thinking: Can social media lead to deep learning in higher education? *College Teaching*, 65(1), 32–39. <https://doi.org/10.29333/iji.2019.12411a>, <https://doi.org/10.1080/87567555.2016.1225663>.
- Sanger, C. S. (2020). Inclusive pedagogy and universal design approaches for diverse learning environments. In *Diversity and inclusion in global higher education* (pp. 31–71). Palgrave Macmillan.
- Santosa, E. B., Degeng, I. N. S., Sulton, & Kuswandi, D. (2020). The effects of mobile computer-supported collaborative learning to improve problem solving and achievements. *Journal for the Education of Gifted Young Scientists*, 8(1), 325–342.
- Schweder, S. (2020). Mastery goals, positive emotions and learning behavior in self-directed vs. teacher-directed learning. *European Journal of Psychology of Education*, 35(1), 205–223.
- Sukardjo, M., & Salam, M. (2020). Effect of concept attainment models and self-directed learning (sdl) on mathematics learning outcomes. *International Journal of Instruction*, 13(3), 275–292.
- The National Education Strategy 2013–2022. (2013). (Valstybinė švietimo 2013–2022 metų strategija) <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.463390>. Accessed 8 May 2020.
- UPK. (2016). *Ugdymas(is) paradigmų kaitoje (Self-education in paradigm change)*. Švietimo ir mokslo ministerija, Vilnius: Švietimo aprūpinimo centras (Ministry of Education and Science. Vilnius: Education Supply Centre).
- Van Boxtel, J. M., & Sugita, T. (2019). Exploring the implementation of lesson-level UDL principles through an observation protocol. *International Journal of Inclusive Education*, 1–17. <https://doi.org/10.1080/13603116.2019.1655596>.
- Wainwright, B. R., Allen, M. L., & Cain, K. (2020). Narrative comprehension and engagement with e-books vs. paper-books in autism spectrum condition. *Autism & Developmental Language Impairments*, April. <https://doi.org/10.1177/2396941520917943>.
- Walt, J. L. (2019). The term “self-directed learning”—Back to Knowles, or another way to forge ahead? *Journal of Research on Christian Education*, 28(1), 1–20. <https://doi.org/10.1080/10656219.2019.1593265>.
- Weiss, S., Lerche, T., Muckenthaler, M., Heimlich, U., & Kiel, E. (2019). Making inclusive instruction succeed: What matters (most) from teachers’ perspectives? The role of teachers’ personal characteristics, joint professional work, and school-related parameters. *Educational Research and Evaluation*, 25. <https://doi.org/10.1177/2396941520917943>.
- Yang, H., Su, J., & Bradley, K. D. (2020). Applying the Rasch model to evaluate the self-directed online learning scale (SDOLS) for graduate students. *The International Review of Research in Open and Distance Learning*, 21(3), 99–120.
- Zhong, Y. (2012). Universal design for learning (UDL) in library instruction. *College & Undergraduate Libraries*, 19(1), 33–45. <https://doi.org/10.1080/10691316.2012.652549>.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter’s Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter’s Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.