



## **General Teachers' Experience of The Brain's Natural Learning Systems-Based Instructional Approach in Inclusive Classroom**

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The issues experienced by general teachers (GT) in instruction in an inclusive classroom in primary school are the difficulty of designing effective instructional strategies that can meet all students' needs with various uniqueness. This research investigates GTs' experiences of the brain's natural learning systems-based instructional approach in an inclusive classroom. The research involved ten teachers from ten inclusive primary schools in three cities in Indonesia. Data were gathered through observation in an inclusive classroom and open interviews. Qualitative data analysis is used to analyze data. The result found six major themes: learning motivation, learning experience, psychomotor, social skill, talent and interest, and general teacher competency. This study implied that teachers could develop their competence by designing effective instruction in inclusive classrooms to benefit all students. The instructional approach based on the brain's natural learning system can be used to manage inclusive classrooms to be more productive.

**Keywords:** instructional approach, brain's natural learning system, inclusive classroom, general teacher, learning

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## INTRODUCTION

The teacher's design of instruction largely determines the success of instruction in inclusive classrooms. General teachers (GT) and specialized teachers (ST) must collaborate to design instruction to all students' needs that can appropriately accommodate without discrimination. Without exception, all students have an instructional target according to their abilities, strengths, and weaknesses (Maki, 2015). Teachers must understand that with students' diverse and unique characteristics in inclusive classrooms, they must provide equal opportunities for all students. The teacher must understand students' learning styles and personal characteristics to design learning according to the classroom characteristics (Clarke & Drudy, 2006; Kubat, 2018). To that end, teachers should have the option to design effective instructional approaches for all students.

A practical must adjust the instructional design to all students' needs and characteristics (Bryant et al., 2019; Rachmadtullah et al., 2020). The teacher can conduct a needs analysis and recognize the characteristics of students before learning begins actively. For this reason, an effective instructional approach is a way for all learners to achieve instructional goals. An effective instructional approach can help teachers help students achieve instructional goals in the form of learning outcomes that have been set before learning (Seechaliao, 2017; Cheng et al., 2019). Although students have different characteristics, if design begins before learning, the teacher has the time and opportunity to revise the instructional approach according to class conditions. The teacher understands that an effective instructional approach in an inclusive classroom must consist of flexible instructional steps, varied instructional methods, appropriate and easy-to-use media, teaching materials available and accessible to all students, and the right time to start to end the lesson. If the teacher can design effective instruction, the instruction objectives are expected to be achieved by predetermined achievements following student needs (Myers et al., 2017; Browne, 2018; Rapson, 2018).

However, in the implementation of instruction in inclusive classrooms, there are still many difficulties experienced by GTs. The teacher has a problem designing successful instruction that can address the problems of each student. Especially if in an inclusive classroom, there are no special teachers who can help the general teacher in carrying out learning. Teachers have a big challenge to share attention with special needs students (SNS) and general students (GS). The teacher is still a central figure in learning, so learning is very dependent on the teacher's presence in the classroom. Classes become less conducive because students depend on the teacher. This condition is caused by instructional methods that are still monotonous, such as the expository method (lectures) or only direct assignments to students (Fitria, 2012). Besides, instructional media that is less varied and can attract students' attention to learn more easily is rarely provided by the teacher. So, it does not help students in understanding the topic of the lesson. Students only use text-books as a tool to fulfill their knowledge. The time provided in one learning activity becomes less, and learning objectives are not by the teacher's performances.

Another problem that arises is that GT has not been able to give appropriate attention to the needs of SNSs because it also has to pay attention to GS. GT only works in the classroom without being assisted by a special teacher who accompanies SNSs. So that GT should have to plan instruction carefully (Rasmitadila et al., 2019). The lack of an appropriate instructional design will not achieve all students' learning objectives (Gilbert, 2019; Wahidah, 2013).

Instruction in inclusive classrooms must be able to be designed as per student's needs. Teachers are expected to meet students' competencies who display cognitive, affective, and psychomotor aspects (Pit-ten Cate et al., 2018; Majoko, 2019; Walton & Rusznyak, 2017). For students who are slow in learning, the greatest challenge to meet is the cognitive aspect, like other GSs. Another aspect that can be developed and improved is the affective and psychomotor according to their uniqueness and specificity. Likewise with autistic students, the development of social and emotional aspects has a positive impact for their future and society. The GTs must determine students' achievements through an instructional approach that is innovative and creative to be applied in an inclusive classroom.

Previous research on brain-based teaching stated that the brain's based learning system relies on cognitive theory (Handayani & Corebima, 2017). This case emphasizes how the brain stores, processes, and retrieves information in a fun way (Malik et al., 2012). One instructional approach model that teachers can use in inclusive classrooms is an instructional approach based on the brain's natural learning system. This study integrated all brain learning systems at each instructional step. It doesn't just rely on the cognitive system. Students' benefits in an inclusive classroom by using an instructional approach based on the brain's natural learning system can generate learning motivation, learning experiences, psychomotor, social skills, interests and talents, and teacher competence. Compared with previous research, the benefits obtained by students are complete by using this approach model.

The brain's natural learning system is learning based on five learning systems: emotional learning systems, social learning systems, cognitive learning systems, physical learning systems, and reflective learning systems (Given, 2002). The emotional learning system provides initial opportunities for teachers to build a comfortable, conducive classroom climate. The relationship between teacher and students becomes closer, warmer, and ready to face core learning. Early learning activities are focused on the teacher's task to build students' desire to learn, explaining the relevance of lessons to students' daily experiences. Students in the future will feel the impact. The social learning system emphasizes activities that allow each student to interact with each other and collaborate in study groups. The goal is to practice making decisions from problems given to students by the teacher so that they independently act as problem solvers. The cognitive learning system trains students to solve problems and make decisions based on the knowledge and experiences that students have learned. The physical learning system trains the coordination of physical, psychomotor, and tactile activities for students to balance knowledge and emotion. The reflective learning system provides a specific

description of the strengths, interests, talents, and ways of reducing student weaknesses to be developed in the future.

The instructional approach model based on the brain's natural learning system is one way to design instruction in inclusive classrooms. GT plan instructional steps, using instructional methods appropriate to the characteristics of inclusive classrooms, the use of various instructional media, and accessible for students to use. Besides, each student can access instructional materials, and teachers can manage the time in instruction. The instructional process is based on five interrelated learning systems and is used at each stage of instruction. The results of previous research conducted by Rasmitadila et al. (2019) have made the main design for an instructional approach model based on the brain's natural learning system.

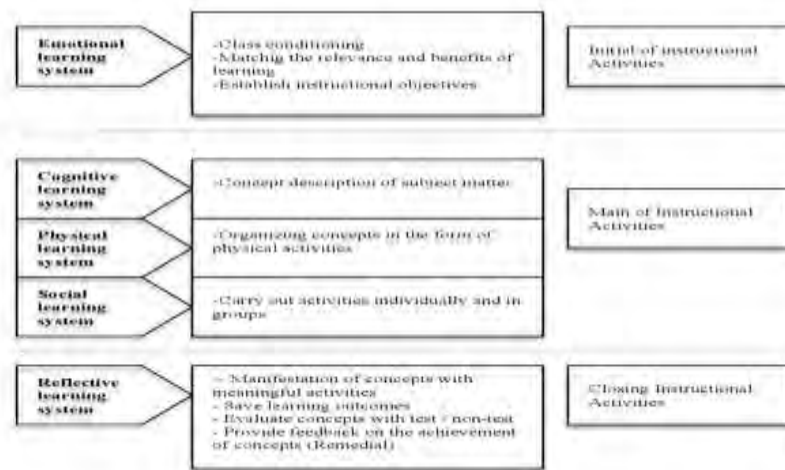


Figure 1

The primary design of an instructional approach model based on the brain's natural learning systems (developed by Rasmitadila et al., 2019).

The results of previous research conducted by Rasmitadila et al. (2019) have made the main design for an instructional approach model based on the brain's natural learning system. The research aims to continue previous research and instructional design approaches based on the brain's natural learning system based on the main design (Rasmitadila et al., 2019). It's to divide it into classroom instructional activities so that teachers get experience using these designs. The activity's design, determined by the researcher, and carried out by the teacher, follows the lesson's instructional steps and the topic. Activities are divided into three parts, namely initial activities, main activities, and closing activities. Researchers carried out observations three times and continued with interviews to ask the teacher's opinion about examples of instructional approach model designs. Table 1 is one an example of an instructional approach based on the brain's natural learning system:

Table 1  
Instructional approach model based on the brain natural learning system in an inclusive classroom

No	Material / Topic of learning	The brain's natural learning systems aspect	Steps / Sequence of instructions	Methods	Media	Materials	Assessment	Time allocation (minute)
Initial of Instructional Activities								
1	"Me and my ideals."	Emotional Learning System	- GT Plays some videos in front of the class. - Teacher brings a paperboard that contains occupations - Teacher explains the purpose of the lesson	-inquiry - lecturer -discussion	-In focus -Paper carton -Board plank	-Short film -Students Books	-	15'
Main of Instructional Activities								
		Social learning system	- GT divides students into six groups - GT divides each one of the illustrated papers into each group. - Each group will make one sentence according to the picture - Each picture will distribute to other groups to make another sentence	- Game - Discussion	-Paper	-Color drawing -Carton illustrated	Rubric	20'
		Physical learning system	- Each group members practice reading sentences (poems) that have been made - GT shows some pictures of animals to one group and demonstrates the characteristics of animals - other - group guess	- Exercise with a friend -Game -Guess image	-Display -Paper -Book	-Carton display -Text-book	Rubric	20'
		Cognitive learning system	- GT asks each group member to look for animal traits - Each group presents the results of discussions with group members	- Discussion	-In focus - Internet	- Internet -Book	Rubric	20'
Closing of Instructional Activities								
		Reflective learning system	- GT explains about poetry and animal growth - GT provides a reward for each group and motivates them to be better on the next topic	- Discussions -Lecture	Star Card	-	Points	15'
Reflection GT to learning: Advantages: - Every student can know that they have the interests and talents that they aspire to. - Learning becomes more dynamic and conducive - Each student is allowed to express their opinion, including SNS. - The use of learning media is easier for each student to use Weaknesses and improvements: - The dominance of GS is still seen in several discussions, even though the opportunity for SNS has been given - Media that is easier to use than materials that are easy to find - SNS still has to be helped so that it is always active and focused when studying								

This study aims to explore the experiences of GTs to the instructional approach model based on the brain's natural learning system.

### **METHOD**

This research is a single case study, included in qualitative research to explore the experience of GT. Besides, observing student learning outcomes about instructional approach models based on the natural brain learning system in inclusive classrooms in elementary schools. Qualitative research aims to explore a person's ideas or opinions in more depth from a topic that is being researched (Kothari, 2004).

### **Participants**

Participants in this study were GT, who taught in an inclusive classroom and used an instructional approach model based on the brain's natural learning system. The number of GTs involved were ten inclusive primary school teachers from 3 provinces, namely West Java, East Java, and Central Java, Indonesia. Researchers of special education or inclusive education have used single-case research methods. The methodology warrants the study of small numbers of participants acting as their control by gaining detailed and specified insight from one or more individual's experience (though usually involving several participants, e.g., three to eight) (Kennedy, 2005; Moeller et al., 2015; Horner et al., 2005). Single-case research is common in special education (Barton et al., 2016).

The criteria for inclusive primary schools were selected based on the following criteria: experience in implementing inclusive schools, being open to collaborating with researchers related to inclusive education, and recommendations from the local education office. While the selection of GT, the researcher held discussions with the principal regarding certain criteria. Some of these criteria include having experience teaching in inclusive classrooms and having attended training on inclusive education from either the education office or a teacher working group in each province. Teaching experience is based on the fact that GT has been able to handle classes effectively, especially SNS, which requires special attention. Besides, GT also participated in training on inclusive education that applied various instructional ways in inclusive classrooms.

Table 2  
Participant information

Name of GT	Frequency	Percentage (%)
<b>Age</b>		
20-25 years	3	30
26-35 years	5	50
>35 years	2	20
<b>Gender</b>		
Female	9	90
Male	1	10
<b>Teaching experiences</b>		
1-5 years	2	20
5-10 years	6	60
>10 years	2	20
<b>Level of Education</b>		
Bachelor's	8	80
Master's	1	10
Others	1	10
<b>Status of School</b>		
Public with accreditation:		
A (Very good)	4	50
B (Good)	1	
C (Enough)		
Private with accreditation:		
A (Very good)	5	50
B (Good)		
C (Enough)		

In addition to GTs, in inclusive classrooms, there are GSs and SNSs. Before carrying out data collection, the researchers had discussions with the school about the students' involvement. The school agreed and provided the opportunity for researchers to carry out research. Of course, with care and adjust the SNSs conditions. The average characteristics of SNSs found in the inclusive classrooms the most in this study are slow learners, autistic students, attention deficit hyperactive disorder (ADHD), and learning difficulties students.

#### Data Collection and Data Analysis

Data were collected through observations and interviews. Observations were carried out in inclusive classrooms in class 4, three times for each class. The selection of class 4 was because students in class 4 tended to be more easily directed in a learning activity without preventing them from being as natural as possible in the research situation. Before observation, each GT has been given a training model of the brain's natural learning system to be used in inclusive classrooms. The use of instructional models based on the brain's natural learning system has been validated by three experts: two inclusive education experts and one primary education. Instruction is carried out for around 2 hours. Researchers recorded all learning activities at all stages of learning.

The resulting observations were in the form of field notes with complete final transcripts. Meanwhile, semi-structured interviews with open questions and interview

guidelines were prepared by the researcher. This interview guide was also validated by the same three experts who validated the instructional model. The interview contents are in the form of teacher experiences about the implementation of the brain's natural learning system. The interview was conducted after three learning observations in the classroom. A total of 4 researchers conducted interviews with ten teachers. Each researcher conducted interviews with 2-3 teachers within two days. The interview length for each teacher is approximately 2-3 hours. Interviews were conducted in a comfortable and conducive atmosphere, in the classroom or a special room. Researchers asked open questions, and the teacher answered according to their experience using the learning model that has been implemented.

Data analysis was used for qualitative data analysis (Spradley, 2016) and modified by Jamaris & Hartati (2017). The study consisted of three steps first, a thematic review of all participants. It included analyzing the observations and interviews relating to implementing the instructional approach based on the brain's natural learning system. Secondly, it was still within-participant thematic analysis, identifying the primary theme; and the third was the cross-participant analysis, identifying the instructional approach model's general issue. The final stage is to analyze the instructional approach model based on the brain's natural learning system in an inclusive classroom to produce relevant cultural themes. The inductive technique allowed identifying themes that participants responded to the research questions (Liu, 2011).

Credibility and dependability were considered during this study. Starting from the data collection instruments utilized based on a review of relevant literature. This instrument was also designed using expert opinion for inclusive education and primary education specialists. After the data were collected, a member check (Lincoln et al., 1985) was used to ensure credibility. Participants (especially in interviews with 10 GTs) were asked to clarify that their contribution was accurately reflected in the previous data. The use of investigator triangulation involving four researchers at all stages of the study (Patton, 2014). Researchers' triangulation also helps researchers reduce bias because triangulation facilitates cross-checking participants' integrity (Anney, 2014). Furthermore, four researchers' involvement in investigating the same problem brings various perspectives in the investigation, thus supporting the findings' integrity.

Table 3  
Qualitative data analysis model

Included term	Semantic term	Cover term
- Generating student learning interest in	is part of	Student learning motivation
- Generating student learning enthusiasm		
- Exploration of new knowledge	is part of	Student learning experience
- Problem-solving practice		
- Developing gross motor skills of and fine students	is part of	Psychomotor students
- Developing collaboration between students	is part of	Students' social skills
- Developing communication between students		
- Self-development	is part of	Students' talents and interests
- Effective instruction design	is part of	GT competencies



**FINDINGS**

Based on data analysis performed, this study produced a profile of the experiences of GTs of an instructional approach model based on the brain's natural learning systems in inclusive classrooms in primary schools.

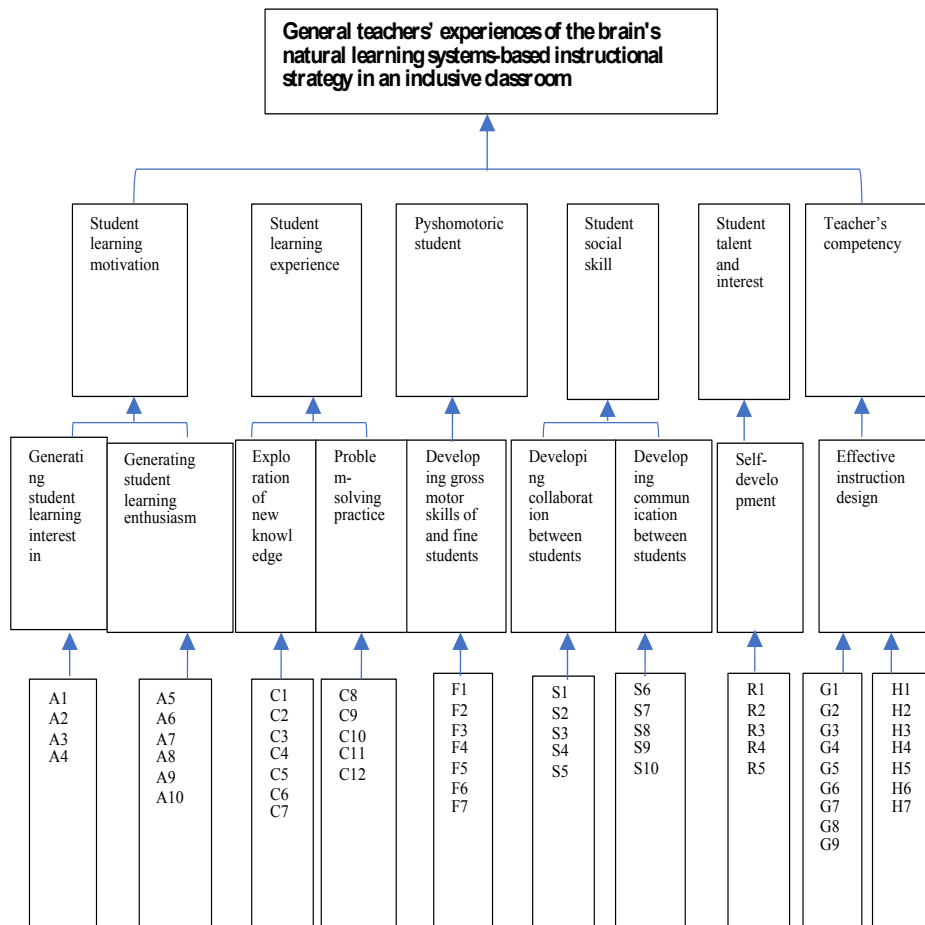


Figure 2  
Profile of GTs experiences on the instructional approach model based on the brain's natural learning system in an inclusive classroom. Codes were made for researchers to facilitate grouping in each learning system\*.

- |   |                                |
|---|--------------------------------|
| A1: Playing a film about soccer players   | C1: Simplify questions         |
| A2: Give examples of athlete achievements | C2: Make a puzzle              |
| A3: Asking students' aspirations          | C3: Snake ladder game          |
| A4: Reading a character's story           | C4: Play the role              |
| A5: Providing a starting game             | C5: Give pieces figure         |
|   | C6: Guess the word and picture |

- |  |  |
|--|--|
| A6: Perform ice breaking                                       | C7: Play words from picture  |
| A7: Play playing a certain character                           | C8: Explain the storyline  |
| A8: Sing a children's song                                     | C9: Look for keywords in figure                                    |
| A9: Give a gift  | C10: The teacher explains the material                             |
| A10: The teacher explains the lesson objectives                | C11: Students give an opinion of the findings of words             |
| F1: Conduct basic dance moves                                  | C12: Students present the results of the project                   |
| F2: Play a musical instrument                                  | S1: Focus to listen to the opinions of others                      |
| F3: Perform simple gymnastics                                  | S2: Make on questions with the group                               |
| F4: A frog jump game   | S3: Give opinions in the group                                     |
| F5: A treasure hunt game                                       | S4: Dare to give opinions  |
| F6: Make a picture   | S5: Give empathy to others   |
| F7: Coloring Picture   | S6: Help friends in a group  |
|  | S7: Appreciate the work of group members                           |
|  | S8: Take responsibility for the task                               |
|  | S9: Choose a group leader  |
|  | S10: Divide the tasks of each group member                         |
| R1: The teacher evaluates learning                             | G1: Simplified format  |
| R2: The teacher appreciates students                           | G2: Develop creativity   |
| R3: The teacher rewards students                               | G3: The design of learning is not complicated                      |
| R4: The teacher explains improvements for each group           | G4: Must be able to design learning with concrete examples         |
| R5: The teacher tells about the strengths of each group member | G5: Use of more varied instructional methods                       |
|  | G6: Prepare more learning media                                    |
|  | G7: Simpler learning steps   |
|  | G8: Must assess strengths and weaknesses learning                  |
|  | G9: Use of time lessons must be taken into account                 |
|  | H1: Provide opportunities for students to be more active           |
|  | H2: Make students happier to learn                                 |
|  | H3: Provide opportunities for students to interact with each other |
|  | H4: Students become more respectful of friends                     |
|  | H5: The class atmosphere is more                                   |

\*Note: Researchers' codes are part of the lesson plans designed to be implemented in the instruction. Researchers observed all activities.

The resulting analysis display six themes of GT's experiences on the instructional emerged. It consists of student motivation, student learning experience, student psychomotor, student social skills, student talents and interests, and teacher competence.

### Experiences using an instructional strategy model based on the brain's natural learning system by teachers:

Table 4

Opinions teachers about instructional strategy model based on the brain's natural learning system

Indicator	Summary of Statements
Activities on the emotional learning system	Emotional activities can be put at the early of learning and done together with physical activities.
Activities in the social learning system	Social learning activities can be done together with physical learning activities because they are interrelated.
Activities in the cognitive learning system	Cognitive learning activities can be tailored to the characteristics of the SNSs, what methods or media will be used. The achievement of SNSs can be adjusted to the abilities of SNSs
Activities in the physical learning system	Physical activity can be put at the forefront of or in conjunction with social, cognitive, or emotional learning.
Activities in the reflective learning system	Reflective learning is tailored to the needs or specialty of SNSs.
Ease of use of the model instructional approach based on the brain's natural learning systems	Easy or not depends on class conditions, as well as the characteristics of SNSs who study together with regular students
The purpose of using the model instructional approach based on the brain's natural learning systems	Very accommodating to all student needs, both SNSs and GSs.
Feasibility of using the model instructional approach based on the brain's natural learning systems in inclusive classrooms	The model covers all aspects of student development, namely five of the brain's natural learning systems, which are very much needed in inclusive classrooms.
Suitability of with the model instructional approach based on the brain's natural learning systems the principles of inclusive education	The model instructional approach based on the brain's natural learning systems is very much following inclusive education principles. It can meet all students' needs, accommodate all student characteristics, and develop skills that should be improved, especially for SNSs.
Recommendations	There is a need for guidelines or books/modules for teachers and schools in implementing the model instructional approach based on the brain's natural learning systems in inclusive classrooms. It can be disseminated to inclusive schools.

### Student Learning Motivation

GTs argue that an instructional approach model based on the brain's natural learning system provides opportunities for all students to foster a desire and enthusiasm for learning, especially at the beginning of instructional activities. Students gain experience, relevance, and learning objectives well. GT design activities are related to understanding an event with the importance of the lesson or topic. For example, when GT displays the badminton world champion's figure, it will give a picture of success to all students to increase the learning interest of all students, including SNSs. All students have a passion for learning and are ready to learn more challenging topics. In inclusive classrooms, GTs need to arouse the enthusiasm of learning of all students so that they

are bound to one another to encourage and support each other for what they aspire. This opinion stated by several of the GTs' opinions:

"I played one piece of an inspiring film, a film about someone's success. I saw all students enjoying the film, and when the film ends, I asked all students about the film's contents. They are very enthusiastic about being like the characters in the film. I explained to them how they could also be successful like that character "(Teacher 3).

Another GT said:

"I am happy that all students were enthusiastic at the start of the lesson when I introduced a famous soccer player. They hope to become soccer players. I suggest that they diligently practice and study. Students have good enthusiasm and interest in learning when I explain it" (Teacher 8).

Students' interest and enthusiasm for learning show their motivation to pay more attention to explore certain topics they like. High learning interest will increase student learning motivation in achieving the GT's instructional goals in learning outcomes (Järvenoja et al., 2019; Agaliotis & Kalyva, 2019). In inclusive classrooms with various characteristics of students, the teacher must be able to create conducive learning so that all students get a positive impact from the series of subject matter that will be studied at the next stage (Obiakor et al., 2019; De Klerk & De Klerk, 2018; Sadler, 2016).

GT's emotional learning system must invite all students, especially SNSs, into a comfortable and mutually supportive learning environment. They get the same success from instruction. The teacher functions to help foster a desire to learn and have a strong desire to be the best in the future by carrying out challenging learning relevant to students' knowledge. Learning motivation for students in inclusive classrooms must include internal and external motivation to hope that instruction can achieve its goals (Nagro et al., 2018; Zajda, 2018). For SNS, cultivating interest and enthusiasm for learning is difficult because of their limitations. For example, slow learner students tend to have low enthusiasm in language learning, so teachers must use certain methods to participate in language lessons happily. ADHD students have a short attention span to concentrate on the subject matter, so GT must direct students appropriately. This condition triggers the loss of students' focus on the material being conveyed by the teacher in the classroom. Teachers must understand that each SNSs limitation must be able to use different ways to generate interest in SNSs, depending on the characteristics and needs of SNSs.

### **Student Learning Experience**

The cognitive learning system places the teacher into the facilitator's role, while students as problem-solvers and decision-makers (Duff & Islas, 2013). By providing learning space in a position that offers students opportunities to explore knowledge, problem-solving, and decision-making based on the process of learning that has been done. In this study, GT designed an instruction GT designs learning using the inquiry method; students jointly solve certain topics. Together with their groups, students will explore the given topic's knowledge, provide solutions to problems, and ultimately have solid

group decisions. For example, in one of the topics about "My Dream" GT provides a picture, students find out and explain it. The methods and media used through this cognitive learning system provide a pleasant learning experience for students. This thing is like the GTs' opinion:

"I am pleased to see all students happy when I give a piece of the picture, consists of a puzzle that makes students find out what the picture means. They find out enthusiastically both from books and the internet, in groups and solve problems well. They get new knowledge and enjoyable learning experiences" (Teacher 1).

Besides, another GT also argued that:

"All students, including special needs students, work together to solve problems, solve problems together. This learning experience is perfect for students" (Teacher 2).

Cognitive learning systems in inclusive classrooms, GT is not a central figure in learning. Although all students have a predetermined achievement, the cognitive system's most crucial goal is the learning experience students will have as learning capital when they move up to the next level. The correct solutions that students get are strongly influenced by positive learning experiences for each student to solve the learning topic being studied, especially for SNSs who have learning disabilities. GS and SNS must support and help each other with functional interactions so that all students' presence is precious. As a facilitator, GT can be a good mediator by giving all students opportunities to find new knowledge. All students can learn and discover new knowledge in a fun way, and each student is allowed to have an opinion so that he can solve problems from a particular topic (Horn et al., 2016).

The cognitive learning systems place all students as children. They have the opportunity to know many things without being dictated by the teacher, but rather explore students' curiosity by utilizing the enthusiasm of student learning raised by the teacher at the beginning of learning. Besides, exploring problem-solving provides learning experiences to students by the teacher. Problem-solving skills in inclusive classrooms can be trained by promoting good relationships between all students, increasing interaction by linking them with prior knowledge (Lin, 2012; Hamilton-Jones & Moore, 2013). All students have the same opportunity to provide good views and opinions. The assistance given by GS to SNS in solving the problems it faces will provide a positive experience as a form of peer support.

### **Psychomotor Students**

Psychomotor students' development is the physical learning system's goal in the brain's natural learning system. The physical learning system involves all class members doing physical activities, psychomotor, and tactile on a topic being studied. The teacher can be a trainer in a particular movement that involves all members of the body to achieve an activity goal or activity. In this study, activities designed through a physical learning system include performing basic dance moves, playing simple musical instruments, making drawings, playing frog jumping. Fine and gross motor movements that are practiced in class together provide an opportunity for students to develop their

psychomotor abilities to develop optimally (Nelson et al., 2017). Students' psychomotor development is in line with students' thinking and mental processes (McBride et al., 1990). The thinking process is more about introducing the base concepts of objects, space, time, and cause and effect. Psychological concepts are oriented towards developing communication, emotional regulation, enthusiasm, and cooperation (Chen & Lu, 2015). Students are more challenged, motivated to learn because it is in a pleasant atmosphere. This thing was expressed by the GT as follows:

"When I invite students to make basic dance moves, move their feet and hands, they are very excited and more enthusiastic about learning after doing those movements" (Teacher 5).

"Sometimes, before learning, I invite students for simple exercises so that their limbs move. They are very enthusiastic and more enthusiastic in learning, but I do not force those who are SNSs" (Teacher 9).

The physical learning system combines several learning systems, namely, cognitive learning systems, emotional learning systems, social learning systems. The physical learning system develops students' thinking concepts towards thinking concepts practiced in a sequence of movements (dance) or excellent motor skills. Besides, motor movements (gross and fine) can foster student confidence, motivation, and student enthusiasm for learning in emotional learning systems. In addition to increasing children's personal development, it can also increase social interaction because it is done together in a happy and pleasant atmosphere.

In inclusive classrooms, psychomotor development is significant to maximize student learning achievement (McKenzie et al., 2017a), which has a long-term impact on productivity, independence, and students' self-potential. However, with SNS's physical characteristics and mobility limitations, it often makes SNS feel useless in lessons. Physical activities that involve SNS must focus on the type of disability they have. Some types of SNSs disabilities, such as cerebral palsy (CP) with limited movement, due to lack of limbs, the teacher encourages by watching his friends' movements. The most important thing for CP students is to stay enthusiastic without feeling their disabilities. GT must be considered this condition and must be sensitive so that limitations can be the basis for SNSs to be a member of the class. The GT can involve GSs as trainers or encourage other physical activities to become part of the physical learning system. The support given by GSs can be a motivation for SNSs always to have a passion for learning, which is a form of togetherness that will lead to successful learning in inclusive classrooms.

### **Student Social Skills**

The social learning system trains the interaction of students who are part of group members. They collaborated in study groups, worked together, and used various creative ways of making decisions from the teacher's problems. Furthermore, students' social skills will be trained with these problem-solving practices. Social skills are an absolute requirement for someone to be accepted in a particular situation that can be done by communicating with others (Garrote, 2017; Puckett et al., 2017). For this reason, GT

uses various instructional methods. The use of learning methods in the social learning system, GT, is directed to use methods to make all students interact. Instructional methods that foster student activeness and togetherness, such as discussions in group work, role-playing is very useful. Instruction promotes cooperation between students to share experiences, knowledge, and opinions can train student communication (Price-Cole, 2018).

The use of various collaborative activities through various activities on a particular topic has a positive impact on developing student skills. This is shown from student learning outcomes, with indicators that each student can understand opinions and express others' expressions or views, including SNS. Several opinions of GT can explain this:

"I can see the use of collaborative learning methods from students' progress, especially in terms of respecting other people's opinions. Usually, SNSs are more reserved, and GSs are more dominant in a group. At least it has shown a change for the better "(Teacher 2)

"I did not think that SNSs could give opinions according to their portion by their friends. Usually, SNSs are timid and tend to be quiet. But with collaboration and want to achieve good grades, they can work together in a group ". (Teacher 5)

The social learning system that is practiced through learning methods and media in an inclusive classroom has supported students' social skills (Dekker & Kamerling, 2017; Amand-Santos, 2018). The practice of cooperation between students--joint problem solving--including with SNS has a good impact because recognizing all their opinions and thoughts can be an experience for the future. This condition will increase self-confidence to be able to contribute to a group. GSs train to listen to the views of SNSs to practice patience and reduce the dominance of instruction activities.

Communication in inclusive classrooms aims to enable each student to share knowledge, thoughts, values, and other skills to increase the competency that will be generated (McKenzie et al., 2017b). For teachers, communication to all students can understand students can thoroughly receive the extent to which the material is delivered. The collaborative learning method is one way for each student to communicate (Forslund Frykedal & Hammar Chiriac, 2018). By collaborating, each student can convey experiences (Wisneski, 2019), get material enrichment, and excellent mental attitude to achieve learning goals. GTs must allow students to be interconnected in the instructional process so that social, emotional, and cognitive abilities can develop optimally.

### **Students' Talents and Interests**

The reflective learning system places the teacher to understand learning styles, strengths, weaknesses, and students' talents and interests through the instructional process. For students, the benefits of this learning system are that they can determine their strengths and abilities, which are indispensable in the future. This study explores and discovered the strengths and weaknesses of students by GT when activities occur. At the time of the dance activity, it was seen that students who had ease or good motor movements could easily memorize the moves. Students who are enthusiastic about drawing or giving

direction to their peers seen as leaders in groups also show talent and interest in the future (Berg & Corpus, 2013). The GTs' mandatories provide equal opportunities and foster students' talents and interests so that their self-esteem becomes higher.

For SNS, the reflective learning system can find talents and interests that have been difficult to develop through their strengths. Especially students who are slow learners, who only emphasize the cognitive aspects. GT trains slow learners to always be active together in their groups, especially in speaking skills. Autistiave a talent in occurs and is confident to teach it to other GSs. Confidence arises when autistic students who are usually more closed in communicating with GS are more confident in learning activities. Below is the opinion of GT:

"I see the progress of one SNSs who is confident in teaching his friend mathematics. During this time, he was less concerned with other friends. I believe that by studying groups, I give each student the same opportunity to express their opinions "(Teacher 1)

"When at the end of learning, I can see the abilities of each student. Some have the talent to dance, talk, draw, and some even like to joke. But for special needs students, I still have to encourage them to show their strengths" (teacher 10).

In inclusive classrooms, the reflective learning system provides the best performance for all students, including deficiencies that teachers must correct (Minott, 2019). All students are assessed by teachers, both academically and non-academically. In both academic and non-academic fields, students' growing interested and enthusiasm towards certain topics such as mathematics and speaking skills are expected to continue in the future. It would be ideal if the other four learning systems together with the reflective learning system were implemented together. To support these ideal results, an attitude of respect and support in carrying out learning must be carried out in a safe and conducive classroom atmosphere.

### **GTs' Competency**

Teacher competency development is an important point in the brain's natural learning system of the instructional approach model. Its implementation in inclusive classrooms requires GTs to design learning more adequately. Instructional designs that meet all students' needs fairly without discrimination will lead to an inclusive classroom. Instructional goals must be reached in all learning areas, namely, cognitive, affective, and psychomotor. Although the achievement of learning objectives has been set, each student's achievement, especially in inclusive classrooms, is not the same, especially SNSs (Rangvid, 2018). The achievements obtained by SNS must be adapted to their abilities so that GT can use special assessment standards to make it fairer. Achievement of instructional outcomes for all students is mostly determined by the design of instruction that must use all abilities, strengths, and limitations present in inclusive classes. The use of an instructional approach model based on the brain's natural learning system has given a chance for GTs to create to develop competencies consisting of pedagogic, personality, professional, and social competencies.



The entire learning system is interrelated and requires all teacher competencies in the implementation of inclusive classroom learning. For example, pedagogical competence relates to emotional learning systems that emphasize understanding student characteristics and student interest in learning. It can also develop personality competencies that make GTs facilitators, motivators, and trainers to all students in learning activities. Cognitive and physical learning systems have improved the professional competence of GTs who can make the classroom a living laboratory with students as researchers with teachers as facilitators. Students can put out their best ability because GTs use various instructional methods without making the teacher-centered. The social learning system has simultaneously developed social competencies to effectively communicate all topics, tightening all students in one friendly study group. GT must be able to provide equal opportunities inclusively to all students in learning. In the long term, the reflective learning system has helped students find all students' strengths and weaknesses. The development of professional competence for GT will have a good impact on all students through wiser actions in learning. This competency development is under the GTs' opinion below:

"I feel that this instructional strategy makes me more passionate about teaching because it can use all my competencies as a teacher. I not only stand in front of the class and explain the lesson from beginning to end, but students are very active in learning"  
(Teacher 6)

"For me, designing instruction in inclusive classrooms has been very difficult because of the different characteristics of students. But with this instructional strategy model, I feel the instructional methods become more varied, which helps me to develop even more"  
(Teacher 2)

The instructional approach model based on the brain's natural learning system positively impacts the impact strategy model that can develop teacher competencies. Also, with aspects in this model approach, learning becomes more effective in inclusive classrooms.

This study aims to explore the experiences of GTs towards the brain's natural learning system of instructional approach model in inclusive classrooms. This study highlights the importance of an instructional approach based on learning systems as a model used in inclusive classroom learning in primary schools. All stakeholders in inclusive primary schools must be able to encourage and support GT to design effective teaching. The goal is that all of the various student characteristics can be accommodated properly. In the end, this research shows that GT can develop its competence by designing inclusive classroom learning, which benefits all students directly (Rasmitadila et al., 2019; Rasmitadila, 2014). From these findings, an instructional approach model based on the brain's natural learning system can organize an inclusive classroom to be more productive.

## CONCLUSIONS

This study highlights the importance of an instructional approach based on learning systems as one instructional approach model used in inclusive classroom learning in primary schools. All stakeholders in inclusive primary schools must be able to encourage and support GT to design effective teaching. The goal is that all the different characteristics of students can be accommodated without discrimination. In the end, this research has a positive impact on GT in designing instruction that is more conducive, interesting, and fun in an inclusive classroom with all the benefits that all students can feel.

This study's findings contribute to the resulting learning approach as a model for making inclusive classes more productive. For the impact to be felt to be wider, must disseminate this research to inclusive schools in a wider scope to obtain input for further studies.

#### **LIMITATION AND SUGGESTION FOR FUTURE RESEARCH**

This study used a qualitative research design that included observation and interviews to explore the experiences of GTs in inclusive elementary schools before the Covid-19 Pandemic broke out massively. This research is a small representation of inclusive teachers, which only consists of 3 provinces in Indonesia. Besides, SNS and GS have not been involved in semi-structured interviews to find out their experiences about the instructional strategy model that has been implemented. Due to limited time and opportunities, the "school from home" program is related to the COVID-19 Pandemic. This study also does not calculate the degree of interactions between GSs and SNSs in the social learning system. It can be claimed that the social learning system does provide social development to all students.

For this reason, future research may utilize quantitative studies or mixed methods studies. Future research could discuss students' experiences (SNSs and GSs) using instructional approach models based on the brain's natural learning systems for inclusive classrooms. Research can also be extended to other provinces and other parts of Indonesia. Finally, there is a need for evaluation research on instructional strategy models based on the brain's natural learning system.

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#### **REFERENCES**

- Agaliotis, I., & Kalyva, E. (2019). Motivational Differences of Greek Gifted and Non-Gifted High-Achieving and Gifted Under-Achieving Students. *International Education Studies*, 12(2), 45–56.
- Amand-Santos, M. S. (2018). *Generalization of Social Skills Based on Instructional Setting*.

- Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*, 5(2), 272–281.
- Barton, E. E., Ledford, J. R., Lane, J. D., Decker, J., Germansky, S. E., Hemmeter, M. L., & Kaiser, A. (2016). The iterative use of single-case research designs to advance the science of EI/ECSE. *Topics in Early Childhood Special Education*, 36(1), 4–14.
- Berg, D., & Corpus, J. H. (2013). Enthusiastic students: A study of motivation in two alternatives to mandatory instruction. *Other Education*, 2(2), 42–66.
- Browne, M. (2018). *Teachers' Perceptions on the Common Core Standards and Effective Classroom Instruction for Students with Disabilities: A Case Study Approach*.
- Bryant, D. P., Bryant, B. R., & Smith, D. D. (2019). *Teaching students with special needs in inclusive classrooms*. Sage Publications.
- Chen, S.-Y., & Lu, L. (2015). The role of achievement motivations and achievement goals in Taiwanese college students' cognitive and psychological outcomes. *Journal of College Student Development*, 56(4), 397–412.
- Cheng, L., Ritzhaupt, A. D., & Antonenko, P. (2019). Effects of the flipped classroom instructional strategy on students' learning outcomes: A meta-analysis. *Educational Technology Research and Development*, 67(4), 793–824.
- Clarke, M., & Drudy, S. (2006). Teaching for diversity, social justice and global awareness. *European Journal of Teacher Education*, 29(3), 371–386.
- De Klerk, M., & De Klerk, W. (2018). *Exploring educators' experiences regarding empathy within inclusive classrooms*.
- Dekker, K., & Kamerling, M. (2017). Social Skills Scores: The Impact of Primary School Population Characteristics and Parental Involvement. *Journal for Multicultural Education*, 11(4), 275–286.
- Duff, V., & Islas, M. R. (2013). Partners in learning. *The Learning Professional*, 34(6), 10.
- Fitria, R. (2012). The instructional process in inclusive settings in primary schools. *Jurnal Ilmiah Pendidikan Khusus*, 1(1), 90–101.
- Forslund Frykedal, K., & Hammar Chiriack, E. (2018). Student collaboration in group work: Inclusion as participation. *International Journal of Disability, Development and Education*, 65(2), 183–198.
- Garrote, A. (2017). The Relationship between Social Participation and Social Skills of Pupils with an Intellectual Disability: A Study in Inclusive Classrooms. *Frontline Learning Research*, 5(1), 1–15.
- Gilbert, E. N. (2019). Designing Inclusive Physical Education with Universal Design for Learning. *Journal of Physical Education, Recreation & Dance*, 90(7), 15–21.

- Given, B. K. (2002). *Teaching to the brain's natural learning systems*. ASCD.
- Hamilton-Jones, B., & Moore, A. (2013). Ensuring high-quality inclusive practices: What co-teachers can do. *Kappa Delta Pi Record*, 49(4), 156–161.
- Handayani, B. S., & Corebima, A. (2017). *Model brain based learning (BBL) and whole brain teaching (WBT) in learning*. 1(2), 153.
- Horn, E. M., Palmer, S. B., Butera, G. D., & Lieber, J. (2016). *Six Steps to Inclusive Preschool Curriculum: A UDL-Based Framework for Children's School Success*. ERIC.
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children*, 71(2), 165–179.
- Jamaris, M., & Hartati, S. (2017). The Role of the Undergraduate Students' Self-regulation s and its Influence to their Academic Achievements. *Int J Multidiscip. Curr. Res*, 5.
- Järvenoja, H., Malmberg, J., Järvelä, S., Näykki, P., & Kontturi, H. (2019). Investigating students' situation-specific emotional state and motivational goals during a learning project within one primary school classroom. *Learning: Research and Practice*, 5(1), 4–23.
- Kennedy, C. H. (2005). *Single-case designs for educational research*. Prentice Hall.
- Kubat, U. (2018). Identifying the Individual Differences Among Students During Learning and Teaching Process by Science Teachers. *International Journal of Research in Education and Science*, 4(1), 30–38.
- Lin, S.-Y. (2012). *Problem Solving, Scaffolding and Learning*.
- Lincoln, Y. S., Guba, E. G., & Pilotta, J. J. (1985). Naturalistic inquiry. *International Journal of Intercultural Relations*, 9(4), 438–439. [https://doi.org/10.1016/0147-1767\(85\)90062-8](https://doi.org/10.1016/0147-1767(85)90062-8)
- Liu, L. (2011). An international graduate student's ESL learning experience beyond the classroom. *TESL Canada Journal*, 77–92.
- Majoko, T. (2019). Teacher Key Competencies for Inclusive Education: Tapping Pragmatic Realities of Zimbabwean Special Needs Education Teachers. *SAGE Open*, 9(1), 2158244018823455.
- Maki, K. (2015). *School Psychologists' Consistency and Confidence in Learning Disability Identification: The Impact of Identification Methodology and Inconclusive Student Data*.
- Malik, M. A., Hussain, S., Iqbal, Z., & Rauf, M. (2012). Effectiveness of Brain-Based Learning Theory on Secondary Level Students of Urban Areas. *Journal of Managerial Sciences*, 6(1).

- McBride, R. E., Gabbard, C. C., & Miller, G. (1990). Teaching critical thinking skills in the psychomotor domain. *The Clearing House*, 63(5), 197–201.
- McKenzie, E., Symonds, M. L., Fink, K., & Tapps, T. (2017a). Challenge activities for the physical education classroom: Affective learning outcomes. *Strategies*, 30(6), 39–44.
- Minott, M. (2019). Reflective teaching, inclusive teaching and the teacher's tasks in the inclusive classroom: A literary investigation. *British Journal of Special Education*, 46(2), 226–238.
- Moeller, J. D., Dattilo, J., & Rusch, F. (2015). Applying quality indicators to single-case research designs used in special education: A systematic review. *Psychology in the Schools*, 52(2), 139–153.
- Myers, D., Freeman, J., Simonsen, B., & Sugai, G. (2017). Classroom management with exceptional learners. *TEACHING Exceptional Children*, 49(4), 223–230.
- Nagro, S. A., Hooks, S. D., Fraser, D. W., & Cornelius, K. E. (2018). Whole-group response strategies to promote student engagement in inclusive classrooms. *Teaching Exceptional Children*, 50(4), 243–249.
- Nelson, C., Paul, K., Johnston, S. S., & Kidder, J. E. (2017). Use of a creative dance intervention package to increase social engagement and play complexity of young children with autism spectrum disorder. *Education and Training in Autism and Developmental Disabilities*, 52(2), 170–185.
- Obiakor, F. E., Obi, S. O., Utley, C. A., Graves, J., & Banks, T. (2019). Special Education for Young Learners with Disabilities: Moving Forward?. *Special Education for Young Learners with Disabilities (Advances in Special Education, Volume 34)*. Emerald Publishing Limited, 209–220.
- Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Sage publications.
- Pit-ten Cate, I. M., Markova, M., Krischler, M., & Krolak-Schwerdt, S. (2018). Promoting Inclusive Education: The Role of Teachers' Competence and Attitudes. *Insights into Learning Disabilities*, 15(1), 49–63.
- Price-Cole, S. (2018). *Instructional Coaching and Co-teaching in Elementary Math Classrooms*.
- Puckett, K., Mathur, S. R., & Zamora, R. (2017). Implementing an intervention in special education to promote social skills in an inclusive setting. *Journal of International Special Needs Education*, 20(1), 25–36.
- Rachmadtullah, R., Syofyan, H., & Rasmitadila, Dr. (2020). The Role of Civic Education Teachers in Implementing Multicultural Education in Elementary School Students. *Universal Journal of Educational Research*, 8(2), 540–546. <https://doi.org/10.13189/ujer.2020.080225>

- Rangvid, B. S. (2018). Student engagement in inclusive classrooms. *Education Economics*, 26(3), 266–284.
- Rapson, A. P. (2018). *Exploring Special Education Teachers' Perception of the Use of Data to Inform Instruction in the Virtual Educational Environment: A Case Study*.
- Rasmitadila, Dr., Widyasari, Dr., Prasetyo, T., Rachmadtullah, R., Samsudin, A., & Riana Suryanti Tambunan, A. (2019). Design of Instructional Strategy Model Based on the Brain's Natural Learning System (MS-SiPAO) in Inclusive Classrooms in Higher Education. *Universal Journal of Educational Research*, 7(11), 2352–2360. <https://doi.org/10.13189/ujer.2019.071113>
- Rasmitadila, R. (2014). Implementation of The Proposed Effective Learning Strategy Based On The Brain Based Teaching System For Sd Students In Curriculum Development 2013. *Jurnal Sosial Humaniora*, 5(1).
- Rasmitadila, R., Samsudin, A., & Prasetyo, T. (2019). Teacher-Students' Instructional Interactions Analysis (TSIIA): A Case Study in Inclusive English Classrooms in Indonesia. *The International Journal of Interdisciplinary Educational Studies*, 14(1), 1–22. <https://doi.org/10.18848/2327-011X/CGP/v14i01/1-22>
- Sadler, C. J. (2016). *Supporting Beginning General Education Teachers in Meeting the Needs of a Diverse Classroom: A Study of Induction Practices*. The University of Wisconsin-Madison.
- Seechaliao, T. (2017). Instructional strategies to support creativity and innovation in education. *Journal of Education and Learning*, 6(4), 201–208.
- Spradley, J. (2016). P. 1980. Participant observation. *Wadsworth, Belmont, USA*.
- Wahidah, A. (2013). The Effect of Training “Understanding and Assisting in Learning” increased Understanding of the Classroom Teachers in Inclusive Schools on Children. *Jurnal Psikologi Pendidikan Dan Perkembangan*, 2(03), 170.
- Walton, E., & Rusznyak, L. (2017). Choices in the design of inclusive education courses for pre-service teachers: The case of a South African university. *International Journal of Disability, Development and Education*, 64(3), 231–248.
- Wisneski, D. (2019). Playing Well With Others: Collaborating on children's right to play. *Childhood Education*, 95(6), 50–55.
- Zajda, J. (2018). Motivation in the Classroom: Creating Effective Learning Environments. *Educational Practice and Theory*, 40(2), 85–103.