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Student Performance Enhancement through the STAD Learning Model: A Case Study of Elementary School in Aceh, Indonesia

Lili Kasmini[a*], Dyoty Auliya Vilda Ghasyah[b], Regina Rahmi[c], Umi Hasanah[d], [a,b,c,d]STKIP Bina Bangsa Getsempena, Banda Aceh, Indonesia, Email: [a*]lili@stkipgetsempena.ac.id

This study aimed to determine the impact of student enhancement trough STAD learning model to improve problem solving in science subjects among elementary school students in Aceh, Indonesia. The experimental study was carried out with 150 students (age 9 years old). This study randomly chose five classes. The class was treated with instructional method and Student Teams Achievement Divisions (STAD) method. The momentary time sampling system technique applied to observe the result between two learning method in the class, rigorous thinking, positive body language, consistent focus, verbal participation, individual attention, and confidence was scoring using observation checklist. Results revealed evidence for the STAD method was proven to be an active learning way in achieving the positive academic outcome.

Key words: *STAD, Learning Method, Teacher Effort, Instructional Method.*

Introduction

The educational process was developed in ensuring the output to yield the quality of education; the integrated system was also studied in achieving the better method. The developing countries such as Indonesia have been working hard in creating the curriculum to support the whole component of the education system. This is due to the fact that the effects of education was the main aspect in ensuring the basic right of citizens that must be fulfilled by the government (Rosser, 2018). The level of education also needs different treatment in achieving the purpose of the good education process. Furthermore, the method has been studied continuously to obtain the specific method in ensuring the scaling up of achievement result for students, but some of the methods tend to be strict, which causes the learning

method to impact the inappropriate circumstances of learning process. Therefore, various methods have been studied to form the effective way in managing the student in the classroom (Taştan et al., 2018).

The teacher also includes the main actor in creating the inclusive place for student in pursuing the education life (Rahman & Alwi, 2018). A science subject and math were admitted as difficult subjects to teach and to understand by students and it needs appropriate approach in delivering the subject in the class (Syukri, Halim, Mohtar, & Soewarno, 2018).

Active learning is one of the learning methods that are designed to achieve student's involvement in innovation of learning and problem solving, than listening to lectures that allow passive transfer of knowledge. Students' involvement in multiple small group activities, yield higher-order thinking processes and students' exploration of attitudes and values instead of spoon feeding (Majoka, Dad, & Mahmood, 2010). Therefore, the active learning method scaling up students' attention and increases the probability of learning that occurred (Nicol, Owens, Le Coze, MacIntyre, & Eastwood, 2018). Student active participation was designed as learning method planning which is associated with positive academic outcomes including student achievement and persistence in the learning process of science subjects (Schmidt, Rosenberg, & Beymer, 2018).

Commonly, in the implementation of science learning, the teachers still put an emphasis on memorisation of theory, rather than concentrating on scientific explanation methods (Fredricks, Hofkens, Wang, Mortenson, & Scott, 2018). To achieve the outcome of learning goals, teachers should develop the teaching methods in creating the learning circumstances by providing the media and laboratory equipment to practice (Hwang, Kongcharoen, & Ghinea, 2014). Student participation in the study group will enhance all student participation in exploring the subject (Lin & Hwang, 2018). Some teachers were found to execute practical work during teaching science; conversely, it is not based on a constructivist and contextual methods to improve students' metacognition in facilitating their comprehension in problem solving which may not be well developed method yet (Sethet al., 2007).

In this study, the STAD model of teaching was developed to observe the output goal of student understanding and involvement in learning science subject. The differentiate of result in this study was divided into two different methods that apply to obtain the significant result between the STAD method and instructional that applied.

Literature Review

The variety of methodology that applied such as active learning techniques, cooperative learning is an instructional paradigm that has numerous structures and methods of

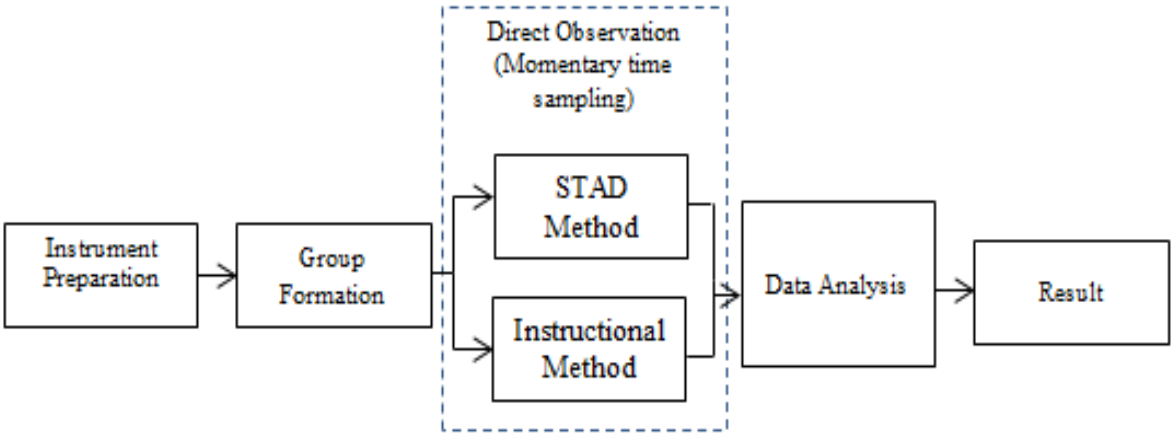
cooperative learning (Gibson, Broadley, Downie, & Wallet, 2018) e.g. STAD (student team achievement division) (Khun-Inkeeree, Omar-Fauzee, & Othman, 2018), TGT (Team-Games-Tournaments) (Şimşek & Baydar, 2019), TAI (team accelerated instruction) (Tichá et al., 2018), STL (student team learning), CIRC (Cooperative Integrated Reading and Composition) (Tichá et al., 2018). Different methods of cooperative learning are recommended for specific subjects of study.

STAD method was found easy for teachers to apply and can be used to teach a variety of subjects in various level of education. In this situation, it seemed reasonable to examine the output result of STAD (student team achievement division) in science subjects in terms of participative learning strategy (Jamaludin & Mokhtar, 2018). Numerous research has been conducted to examine the cooperative learning result in science subjects, due to the learning characteristic to accelerate the process of teaching and learning. A case study in applying the method involves typical logic and argumentation, which require specific teaching-learning approach. Furthermore, mathematics is given vital importance in pedagogies as it is considered predictable for social life as well as exploration of the universe. In general, many teachers of modern age have found "co-operative learning" as a beneficial teaching-learning technique for different subjects.

Methodology

The sample students of five classes were divided into two methods, namely instructional and STAD. Ten teachers having equal qualification with equal teaching experience and considerably equal teaching potential were selected to teach randomly in each class. The instructional method and the cooperative learning method STAD conducted lasted for a period of 7 weeks. Instrument preparation during the observation process was designed and observed by the volunteer as the external component to record the process. During the implementation of the study, the volunteer recorded the observation checklist in each class there were observed the learning method implementation.

Figure 1. The Flow process of learning method implementation



This study was employed using momentary time sampling system technique; each student and teacher were observed for rigorous thinking, positive body language, consistent focus, verbal participation, individual attention, and confidence. The result was obtained based on a scale of observation checklist. The research instrument is designed could be generated by the index number.

Results and Discussion

Based on the analysis result of STAD method and instructional method that applied in two different methods, the observation result revealed as shown in fig. 2a and fig. 2b

Figure 2. Index of performance of Teachers Effort and Students Achievement

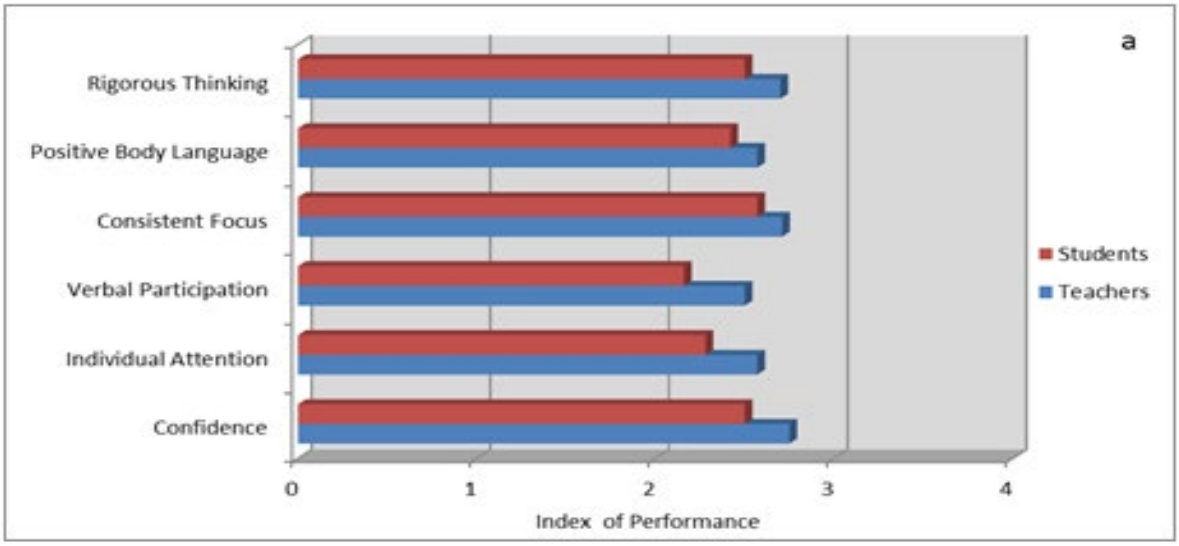
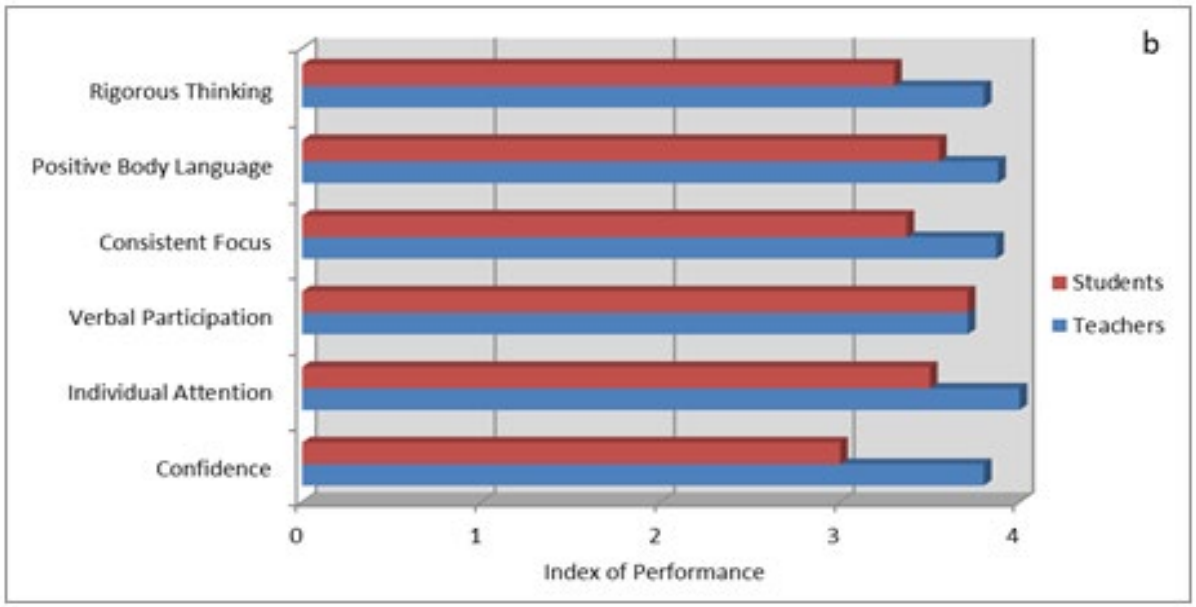


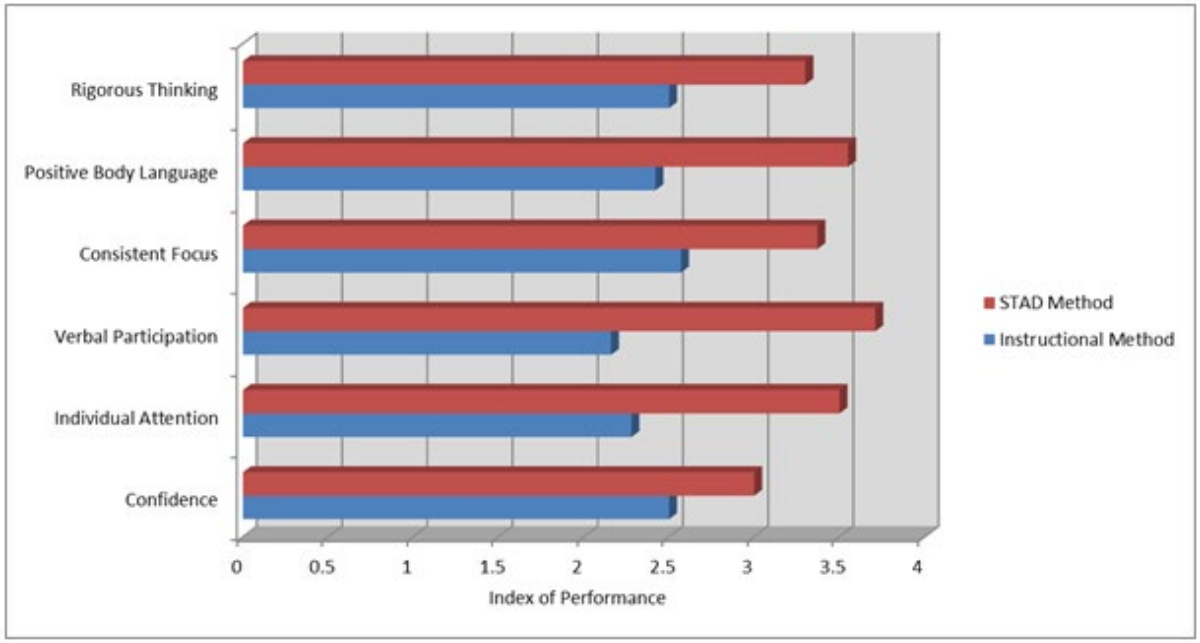
Figure 2a. Instructional Method, Fig. 2(b). STAD Method



Both the Instructional Method and the STAD method showed the different result of percentage index, high effort of teacher in term of stimulating the student group to obtain significance of the performance was the crucial factor in meeting the student achievement index. However, the STAD method shows a better performance. The achievement index increased by an average percentage of 60.12% to 85.12%.

Based on a momentary time sampling, the highest percentage increase of the parameter of Verbal Participation was shown a positive feedback that is revealed changes that reached 38.75%. These results indicate that the STAD method was influenced by the students' verbal abilities of subject science, compared to other parameters that were observed during the study using observation checklist.

Figure 3. Students Achievement Index



The index of student achievement that revealed, shown in Fig. 3 among two different methods applied shown the significant of student achievement index and STAD method have been proven the student performance response was significant increase. The most significant index that yields during STAD model applied was verbal participation. This result obtains from the observation process that shown the student participation in the whole process.

Figure 4. Students performance in completing the test

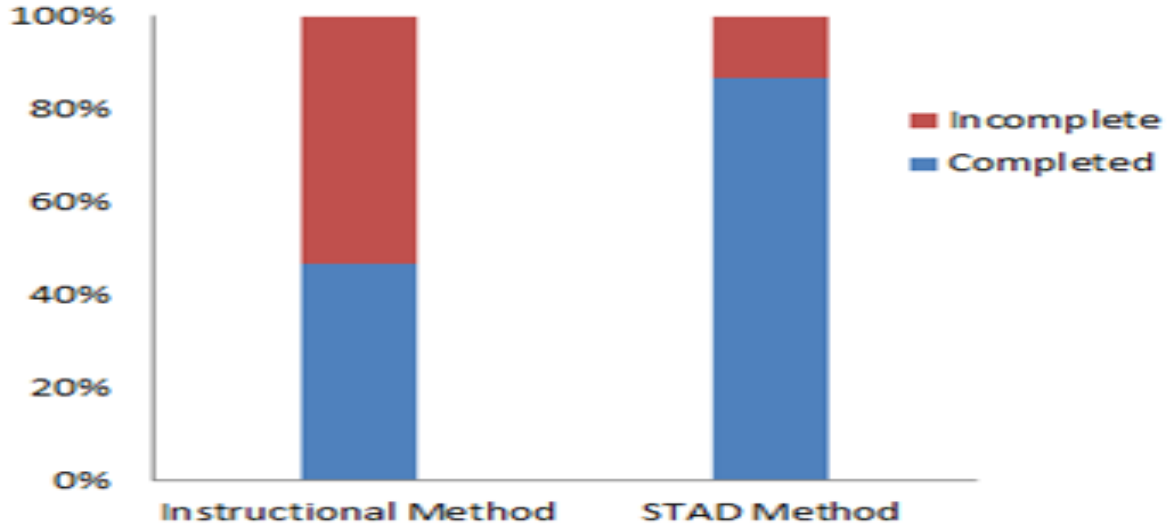


Fig 4. Showed the percentage of students in completing their test during the instructional method and STAD method. The percentage of students in completing the test was 46.67% for

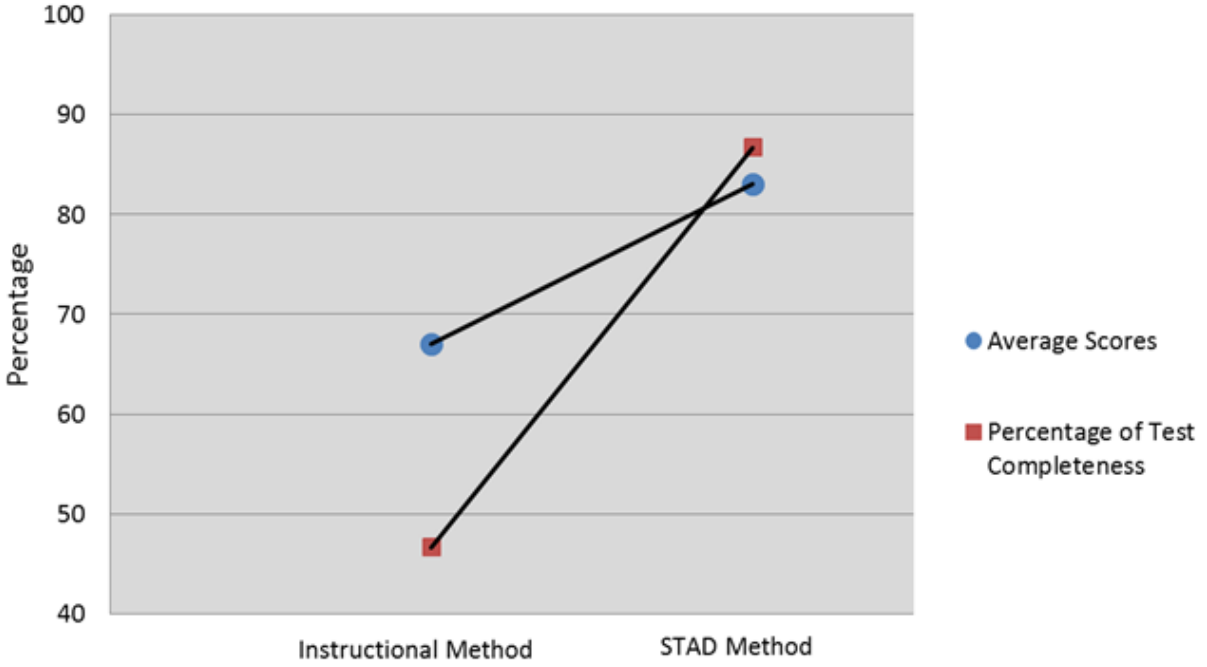
the instructional method and the test was also applied to the student with the STAD method that revealed 86.67% of students succeed to complete the test with the same question and the same limit time that arrange with the teacher. The Comparison of achievement between the instructional method and STAD method is shown in Table 1.

Table 1: Comparison of student scores between instructional and STAD method

Method	Number	Index	Score		Completeness
			Average	Mean	
Instructional	150	2.44	67	70	46.67%
STAD	150	3.46	83	85	86.67%

Table 1 indicates the index score between two methods; yield the different index number of achievement, instructional methods revealed 2.44 and the STAD method 3.46. Hence, between the mean scores of the instructional and STAD method was revealed to be non-significant. STAD method did not significantly influence the increase in the average value of students, but it had a high impact on the percentage of completeness students in completing the test.

Figure 5. Correlation of Scores and Completeness



The graph in fig 5 shows the correlation between student's completeness of the test and the average scores. In this study, the significance of student completeness in completing the test was scaled up, rather than the completeness of student using instructional method. However the average scores of students for the test approximately increased to 83 by STAD method

compared to instructional method were 67. This result shows the STAD method was influenced significantly to task completeness of students for elementary school in Aceh.

Conclusion

To achieve positive feedback in yielding the better circumstances on implementing the understanding of student in science subjects must identify the appropriate method of delivering the subject. In this study STAD method found better engagement in the learning process and effective, the teacher effort founded as the main factor in influencing the class. This is comparable to the instructional method that also applied in this study. Even though the STAD method does not have a significant effect on the index value that indicates the level of understanding of students, but has a significant effect on student motivation in completing the test.

REFERENCES

Fredricks, J. A., Hofkens, T., Wang, M. T., Mortenson, E., & Scott, P. (2018). Supporting girls' and boys' engagement in math and science learning: A mixed methods study. *Journal of Research in Science Teaching, 55*(2), 271-298.

Gibson, D., Broadley, T., Downie, J., & Wallet, P. (2018). Evolving learning paradigms: Re-setting baselines and collection methods of information and communication technology in education statistics. *Journal of Educational Technology & Society, 21*(2), 62-73.

Hwang, W.-Y., Kongcharoen, C., & Ghinea, G. (2014). To enhance collaborative learning and practice network knowledge with a virtualization laboratory and online synchronous discussion. *The International Review of Research in Open and Distributed Learning, 15*(4).

Jamaludin, M., & Mokhtar, M. F. (2018). Students team achievement division. *Int. J. Acad. Res. Bus. Soc. Sci, 8*(2), 570-577.

Khun-Inkeeree, H., Omar-Fauzee, M. S., & Othman, M. K. H. (2018). The Effects of Student Achievement Team-Division (Stad) on Achievement And Retention In Mathematics Of Thai Students. *European Journal of Education Studies*.

Lin, C.-J., & Hwang, G.-J. (2018). A learning analytics approach to investigating factors affecting EFL students' oral performance in a flipped classroom. *Journal of Educational Technology & Society, 21*(2), 205-219.

Majoka, M. I., Dad, M. H., & Mahmood, T. (2010). Student team achievement division (STAD) as an active learning strategy: Empirical evidence from mathematics classroom. *Journal of Education and Sociology, 4*, 16-20.

Nicol, A. A., Owens, S. M., Le Coze, S. S., MacIntyre, A., & Eastwood, C. (2018). Comparison of high-technology active learning and low-technology active learning classrooms. *Active Learning in Higher Education, 19*(3), 253-265.

Rahman, S. A., & Alwi, A. (2018). The Inclusion of Cultural Diversity in Higher Education Curriculum Design. *International Journal of Contemporary Educational Research, 5*(2), 87-94.

Rosser, A. (2018). Beyond access: Making Indonesia's education system work.

Schmidt, J. A., Rosenberg, J. M., & Beymer, P. N. (2018). A person-in-context approach to student engagement in science: Examining learning activities and choice. *Journal of Research in Science Teaching, 55*(1), 19-43.

Şimşek, U., & Baydar, A. (2019). Impacts of Jigsaw And Teams-Games-Tournaments (Tgt) on Social Studies Pre-Service Teachers'epistemological Beliefs. *International Online Journal of Education and Teaching, 6*(2), 405-414.

Syukri, M., Halim, L., Mohtar, L. E., & Soewarno, S. (2018). The Impact Of Engineering Design Process In Teaching And Learning To Enhance Students' Science Problem-Solving Skills. *Jurnal Pendidikan IPA Indonesia, 7*(1), 66-75.

Taştan, S. B., Davoudi, S. M. M., Masalimova, A. R., Bersanov, A. S., Kurbanov, R. A., Boiarchuk, A. V., & Pavlushin, A. A. (2018). The Impacts of Teacher's Efficacy and Motivation on Student's Academic Achievement in Science Education among Secondary and High School Students. *EURASIA Journal of Mathematics Science and Technology Education, 14*(6), 2353-2366.

Tichá, R., Abery, B. H., McMaster, K., Avagyan, A., Karapetyan, S., & Paylozyan, Z. (2018). Instructional Strategies for Inclusive Classrooms: PALS, Cooperative Learning, Direct Instruction and Play-based Strategies. *Inclusive Education Strategies: A Textbook*, 105.