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Running head: Extended Recess with Loose Parts Play

The Impact of Extended Recess with Loose Parts Play on Montessori Primary Student Self-Regulation and On-Task Behaviour

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Abstract

The purpose of this investigation was to study the impact of extended recess with loose parts play on student self-regulation at recess and on-task behavior after recess. The population for this action research study were students in grades one through three at a public Montessori elementary school in the Lower Mainland of British Columbia during a Covid-restricted school year. The intervention involved 45-60 minutes of extended recess with access to loose parts play for three weeks. Data collection included the following: loose parts play field observations, conflict type and frequency, on-task behaviors tally, and student self-assessments of on-task behaviors. As a result of the intervention, students experienced fewer conflicts at recess and more on-task behaviors after recess. Due to the findings, future actions include trying different schedules of extended recess with rotating access to loose parts and inviting more children to join.

Keywords: loose parts play, extended recess, self-regulation, on-task

At a 2020 staff meeting, staff discussed the problem of some students coming in from recess unready to learn. School data suggested that students needed referrals to the office or the youth care worker to resolve the conflicts that erupted on the playground. It was also not uncommon for some students in my classroom to require that I facilitate restorative peace talks after recess during class time. This process was time and energy-consuming, and it detracted from classroom learning. I wondered whether there was a problem with the way we were offering recess to students.

A teaching staff member at the meeting referred to research indicating that recess is too short and that if we were to extend recess, there was a possibility we would see a decrease in student conflict at recess. I questioned what the research pointed to with regards to optimal recess length and recess quality. In general, research highlights the importance of recess and the benefits of recess with loose parts play. Loose parts are natural or man-made items, such as sticks and plastic containers, that children can use for play. The included review of the literature led to the following hypotheses to test in this action research.

First, student self-regulation at recess would increase. By providing extended recess from 45-60 minutes, students would have sufficient time to get into deep, satisfying play. They would have ample time and practice choosing who to play with, where to play, what to play, and how to play. They would have many loose parts to choose from to create a variety of engaging play schemes. Also, students would have sufficient time to practice resolving conflicts independently or with a supervising adult. More practice would lead to more conflict resolution skills, leading to greater self-regulation.

Second, student on-task behavior after recess would also increase. Students would have a restoring break from the cognitive loads imposed by classroom learning. As a result, they would be ready to learn when they re-entered the classroom from recess. Further, they would not be agitated from the conflicts generated at recess, since they would have more time and practice genuinely resolving their disputes as they arose.

Theoretical Framework

The following two theories are pertinent to my work because I am studying the effects of outdoor play (45 min) with loose parts on student self-regulation at recess and on task behaviour after recess.

Vygotsky's Sociocultural Theory

One part of Vygotsky's Sociocultural Theory is that "self-regulation is developed through internalization (developing an internal representation) of actions and mental operations that occur in social interactions" (Schunk, 2012, p. 243). During recess play there is an abundance of social interaction, therefore children develop self-regulation skills through recess play. When children have the opportunity to practice real-world skills in the untethered space of unstructured pretend play at recess, they can then transfer those skills to other environments, such as the classroom. "The child who sits still for only a few minutes during story time can attend for as long as five to ten minutes while playing school" (Berk & Myers, 2013). Pretend play allows children to demonstrate greater command of a skill or ability they are working to master. During pretend play, children exhibit greater self-regulation. This practice may strengthen their self-regulation "muscles" in general and may transfer to greater self-regulation in real-world contexts. Children afforded an extended recess with loose parts play will have greater

opportunities to engage in rich social interactions and pretend play that will help them develop their self-regulation skills.

Kaplan's Attention Restoration Theory

Children taking part in this action research attend recess at school outside in a natural setting consisting of trees, grassy fields, and forested areas.

Attention Restoration Theory (ART) (Kaplan, 1989, 1995) suggests that mental fatigue and concentration can be improved by time spent in, or looking at nature. The capacity of the brain to focus on a specific stimulus or task is limited and results in 'directed attention fatigue'. (Garside, 2020)

Children's cognitive loads are taxed by regular classroom learning, and they need breaks to restore their attention. Breaks in nature are more restorative than breaks not in nature. Therefore, children who are spending extended recess time in these spaces are restoring their attention for learning following the break.

Review of Literature

Introduction

Loud, excitable and unfocused, Montessori primary school students often return from their 30-minute break in a state of agitation and unready to learn. It can take 5-20 minutes for them to settle down and sometimes they require a restorative peace talk facilitated by the classroom teacher or interventions from the school's youth care worker or administrator. This research addresses why some of the children appear incapable of resolving their recess conflicts independently as well as their readiness to learn after recess.

This inquiry led to an initial review of the academic literature. Overall, the literature supports the benefits of recess, particularly recess involving loose parts play, but it does not

address the extended length of recess and how it impacts student self-regulation and on-task behaviour. This action research explores the impact of a 45 to 60 minute recess with loose parts play on primary Montessori student self-regulation skills at recess and on-task behaviour in the classroom after recess. This literature review will examine the importance of recess as a break from the cognitive loads imposed by learning, the optimal duration and frequency of recess, the benefits of freedom at recess, and loose parts play and its benefits.

The Importance of Recess as a Break

Recess provided students a much-needed break from the cognitive loads imposed by learning. According to Stapp and Karr (2018) and Chang and Coward (2015), some schools in the United States have opted to reduce or eliminate recess breaks to make room for an increase in instructional time due to pressure from state mandates to meet specific learning standards. However, there have been little findings suggesting that this method was effective, and although there was an increase in instructional time, there was a decrease in concentration, and overall efficiency of learning was not optimal. On the contrary, according to Brez and Sheets (2017), Chang and Coward (2015), Hanscom (2017), and Stapp (2018), recess seemed to provide a much-needed break from the cognitive loads imposed by learning, thereby increasing student time-on-task, allowing instructional time to be more efficient.

Instructional time was more efficient post-recess. Hanscom (2016) stated that a child's brain could not maintain efficiency and attention without a break. Children needed opportunities to play and move to be able to learn effectively in the classroom. Stapp and Karr (2018) made similar claims and found that students in a grade 5 class remained more on-task after a 25-minute recess break compared to before a 25-minute recess break. Student on-task behaviour after recess increased by 33.7% as compared to before recess. In Stapp and Karr's 2018 study, on-task

actions included: answering questions asked by a teacher, looking at or writing educational materials, receiving assistance from a teacher or teacher's assistant, raising a hand and waiting to be called on, reading a book when finished with work, and looking at a teacher or speaker. Off-task behaviours included: playing with materials, staring into space/looking around class/stretching, laying head down, scribbling on paper, talking to a classmate about non-academic matter, talking to the teacher when not asked a question, singing or talking aloud to oneself, and out of a seat or walking around class without permission. Further, Stapp and Karr (2018) connected time on task and academic achievement: the greater the amount of time-on-task, the more outstanding the academic achievement.

Similarly, Brez and Sheets (2017) found that children in grades 3-5 were more attentive after recess than before recess. To measure attentiveness, students had to carefully read age-appropriate short passages and cross out every letter 'e' as they read. To do this, students had to demonstrate that they could focus on this task while inhibiting other behaviours. Data suggested that the recess break increased student attentiveness. The findings in these studies that reveal students were more on-task or attentive after recess align with the idea postulated by Stapp and Karr (2018) and Brez and Sheets (2017) that children benefitted from a break after a certain length of concentrated instruction. Recess reduced stresses and distractions that impeded cognitive processes.

Optimal Duration and Frequency of Recess

The optimal duration or frequency of recess was not clear. Chang and Coward (2015) highlighted that in some Shanghai schools, educational authorities recognized breaks as necessary, and 40% of the day was recess. School professionals operated under the understanding that "recess may help students avoid cognitive overload and the temptation to

create distractions during instruction” (Change and Coward, 2015, p. 2). Students in the primary ages typically received breaks after a 35-minute lesson. It is important to note that these schools received top honours in reading, math, and science on the Program for International Students Assessment. It is also important to note that the school day was longer than the average American school day, although the exact time span was not stated, and students consolidated their learning through homework. Therefore, due to the confounding variables, there was no direct association between academic success and an increase in recess. Further, Chang and Coward (2015) added that students had 75-minutes of recess each day in Finland, and there were 15 minutes breaks after every lesson. The length of the school day or courses was not clear, nor was what happened during those recess breaks. It is also not clear what effect this had on student on-task behaviour after recess. Finally, Hanscom (2016) noted that in her observation, it took an average of 45 minutes for children to decide whom they would play with and what they would play. She stated that when children had a twenty-minute recess, the end of recess was the time when they were deciding who they would play with, and that a twenty-minute recess did not allow children enough time to engage in challenging play, although challenging was not clearly defined. There was no research to support her claims since the evidence did not come from peer-reviewed studies.

Benefits of Freedom

One element of recess that benefitted students was the freedom afforded by unstructured play. Recess has been unique to the student experience due to its characteristic of freedom. In some aspects of the Montessori classroom setting, children have not always had the option to withdraw from an activity, whereas during recess, they were "free to join in or leave play situations according to their own discretion” (Jarrett, 2002 as cited in Stapp and Karr, 2018, p.

450). Moreover, Gibson et al. (2017) recognized that recess play required children to have more advanced skills than in other school contexts, although the kinds of skills were not elaborated.

There are various definitions of unstructured play, and the one chosen for this literature review comes from Gibson et al. (2017):

Unstructured play allows children space to choose and create their own playful activities, to navigate their social worlds, to make independent decisions and to experience consequences of their own actions. (p. 296)

At the heart of unstructured play is the element of freedom to "initiate, negotiate, co-operate, share, and build relationships with one another" (Chang & Coward, 2015, p. 2).

The freedom afforded by unstructured play had several benefits. Gibson et al. (2017) and Chang and Coward (2015) highlighted the connection between the development of independence and lack of adult supervision. Brez and Sheets (2017) also claimed that children benefitted from free play. They found that children chose play options according to their personalities and current emotional states. They also found that some introverted children got a break from social interaction during recess, allowing for time to recharge. They questioned whether freedom during recess allowed for the overall increase in sustained attention after recess, as children seemed to choose the kinds of activities that appeared to meet their needs best.

For example, children who played on the blacktop area [area that showed lower increases in sustained attention pre- to post- recess] had higher fluency scores on the creativity task prior to recess, and children who played on the playground equipment had lower creativity scores...prior to recess. In both cases, the differences seemed to disappear after recess. (p. 441).

Similarly, Countryman and Gabriel (2014) asserted that children could experiment during play, leading to cognitive and behavioural flexibility. Further, Hanscom (2016) highlighted a study at The Swanson Elementary School in New Zealand that explored the effects of removing rules at recess. They found a significant decrease in inappropriate behaviour, that fewer teachers were required to supervise, and that the time-out area was no longer necessary.

Benefits of Loose Parts

Another aspect of recess that benefitted children were the affordances provided by loose parts. First, a definition of loose parts, according to Nicholson (1971) as cited in Houser et al. (2016):

Loose parts are defined as materials that are variable, meaning they can be used in more than one way so that children can then experiment and invent through play, and these materials can be natural or synthetic. (p. 782)

Examples of loose parts include sticks, stones, pinecones, tires, recycled containers, etc. Nedovic and Morrissey (2013) state that affordances refer to loose parts' potential play opportunities. Nicholson (1971) as cited in Houser et al. (2016) asserted that "inventiveness, creativity, and the possibility of discovery" were related to the quantity and kinds of loose parts available for play.

Second, a distinction between the different kinds of loose parts play as noted by Flannigan and Dietz (2017) and Houser et al. (2016); they stated that when children played with loose parts, they engaged in three types of play. The first type involved utilizing loose parts for functional purposes, such as jumping over logs. The second type consisted of collecting loose parts to make something, such as a pretend campfire. The third type involved engaging in dramatic and combined play, whereby the loose parts functioned as imaginary items in play schemes and stories.

One benefit of play with loose parts was that it sparked and nurtured children's imaginations and creativity. Flannigan and Dietz (2017) claimed that children's imaginations were activated and expanded when they assigned roles to the loose parts materials. According to Gibson et al. (2017), qualitative interviews with teachers drew a connection between increased creative play and loose parts use. Moreover, Hanscom (2016) added that children could create complex and elaborate play schemes with provisions to loose parts.

The second benefit of play with loose parts was the development of children's leadership and social skills. Flannigan and Dietze (2017) contended that older children would often provide leadership and act as decision-makers in loose parts play, determining which children would enter play and how often. Younger students would listen and obey. Similarly, Gibson et al. (2017) found that sharing the loose parts resources led to the collaboration between older and younger peers, leading to social skills development.

The third benefit of play with loose parts was the development of children's executive function and self-regulation skills. According to Berk and Meyers (2013), the following is a definition of executive function (EF):

the set of cognitive operations and strategies necessary for overseeing and conducting challenging, purposeful life tasks. EF encompasses controlling attention, suppressing impulses in favor of adaptive responses, and combining information in redirecting thought and behaviour (p. 98).

As stated previously, one aspect of loose parts play involves make-believe. Berk and Meyers (2011) contended that research supported a link between pretend play, or make-believe, and EF skill by aiding in the development of self-regulating thought. Kelly and Hammond (in Berk and Meyers, 2013) found that four- to seven-year-olds who demonstrated pretend play in a laboratory

setting correlated with the ability to have inhibitory control. Similarly, Gibson et al. (2017) found that qualitative interviews with teachers revealed reduced playground aggression when children played with loose parts. Vygotsky (1978) as cited in Berk and Meyers (2013) noted that pretend play elevated a child's ability to act maturely. Play required children to favour rule-governed behaviour such as co-operating, waiting, and sharing. "The child who sits still for only a few minutes during storytime can attend for as long as five to ten minutes while playing school" (Vygotsky, 1978 as cited in Berk and Meyers, 2013).

Conclusion

The literature established the benefits of recess as a break, the freedom necessary at recess, and how loose parts play creates rich play opportunities. Research made clear that a break from academic tasks helped students to re-engage with the challenges of learning. However, literature was lacking with regards to the 5 to 9-year-old group and the optimal frequency or length of recess that best served them. Furthermore, the literature did not adequately address the phenomenon of catching students mid-conflict upon re-entry from a 30-minute lunch recess. However, the literature indicated the positive impact of freedom, relative lack of adult supervision and lack of recess rules on student self-regulation skills. Qualitative research pointed to the benefits of loose parts play as it pertained to imagination and creativity, leadership and social skills, and executive function development, particularly for preschool-aged children, but also for primary aged children. Perhaps combining an extended recess with access to loose parts play will increase student on-task behaviour in the classroom and recess self-regulation and conflict resolution skills.

Methodology

The purpose of this research was to determine the impact of extended recess with loose parts play on student self-regulation at recess and on-task behavior following recess. The study used an experimental design. Measures included observations of loose parts play, observations of conflicts at recess, tallies of on-task behaviors after recess, and student self-assessments of on-task behaviors after recess. The researcher collected and analyzed data from four data tools described in more detail below to assess the relationship between extended recess with loose parts play on student self-regulation during recess and on-task behavior after recess.

Participants

The population for this action research study was Montessori students in grades one through three at a public Montessori elementary school in the Lower Mainland of British Columbia. The sample size was twenty-one, consisting of eight first graders, nine second graders, and four third graders. Subjects were members of one primary classroom and included twelve boys and nine girls.

Procedures

During the baseline week, recess took place from 12:20-12:50 p.m. Students had access to existing natural loose parts in the playground environment, including fallen sticks, fallen branches, fallen bark, pinecones, rocks, and gravel.

Due to COVID-19 restrictions, classroom students played with one another in a designated quadrant of the schoolyard. The quadrant assigned to the class rotated every week for a total of 4 weeks per rotation cycle. Each week of the action research started on a Wednesday and ended on a Tuesday.

Play Environments

The first quadrant consisted of a baseball diamond, a forested area along a fence, a gravel path, a paved basketball court, and a section of the field. Students played in the first quadrant the first three days of the baseline week, from Wednesday to Friday.

The second quadrant consisted of a small section of densely forested trees and bushes along a fence, a gravel path, a quarter of the field, and four swings. Students played the last two days of the baseline week, from Monday to Tuesday, and the first three days of the first experimental week, from Wednesday to Friday in this quadrant.

The third quadrant consisted of two mid-size playground structures, trees along a fence, a large stump, a gravel path, a quarter of the field, large cut tree stumps arranged in a u-shape for sitting, a raised garden, and an outdoor classroom consisting of four benches facing each other atop gravel. Students played in the third quadrant the last two days of the first experimental week, from Monday to Tuesday, and the first three days of the second experimental week, from Wednesday to Friday.

The fourth quadrant, consisted of one mid-size playscape, one large playscape four swings, one dome-shaped metal structure, one square-shaped metal structure, a collection of trees in the center of the play area, a small group of stumps, a few small flat benches with no backs, a large yellow storage bin, a baseball diamond with fencing, and a gravel path. Students played the last two days of the second experimental week and the first three days of the third experimental week in this quadrant. The last two days of the third experimental week took place in the first quadrant described above.

Further Procedures

Due to school policy, at 12:50 pm each day for the duration of the study, students would make their way back to line up outside their classroom. When the experimental weeks were underway, they would carry back the loose parts they had been using as they went to line up. Once students all gathered, they were allowed to resume play for extended recess, which always took part in the fourth quadrant, located outside the classroom door.

During the experimental weeks, recess lasted between 45-60 minutes. The length of recess varied according to the observer's discretion. On some days, the observer was mid-conflict-resolution at the 45-minute mark, and therefore chose to end recess after this point. On other days, the observer noted rich play amongst students at 45-minutes and chose to end recess at a natural lull in activity following the 45-minute mark. Also, the following is a list of loose parts that the researcher added to the play environment:

- two small bike tires
- eight pieces of 1 m long strands of sturdy rope
- eight small plastic cups
- four plastic plates
- two small plastic boxes with lids
- two mid-size bins
- six plastics clothes hangers
- two curved plastic pipes, two large bin lids
- six wooden chopsticks.

The teacher introduced the container of loose parts to the play environment at the beginning of recess. Students could freely select two play items each, and they were able to return for more once all interested parties had a turn to choose their items.

Items could be returned to the bin or exchanged for other items at any time. During recess, the guiding rules were that students stay safe and be respectful. The teacher instructed students to ask themselves if the words or actions they chose were safe or respectful. The teacher intervened and asked students if they were safe or respectful when she heard words or saw actions that she deemed unsafe or disrespectful. Also, as per school policy, no loose part item could be used as an active weapon. For instance, a loose part could act as an imaginary weapon for trading at a pretend store, but it could not act as a pointed gun or a swinging sword in a fighting play scheme. Finally, the only supervising adult was the teacher of this primary classroom.

Data Collection

A total of four tools were used to collect data regarding student self-regulation at recess and on-task behaviour after recess. When collecting data about loose parts play, the teacher noted whether the play was one of three kinds: functional (such as jumping over logs), collecting (such as gathering sticks to build a campfire), or dramatic/pretend play (such as using imaginary items in play schemes). These observations were recorded on the Field Notes Per Individual Loose Parts Play Events Form (Appendix A). The researcher also recorded anecdotal notes of the play witnessed to determine the quality of play and whether were self-regulating during play. The researcher did not document every act of loose parts play since she could not witness them all. The details of conversations between children were hard to decipher and were not typically incorporated in the observational notes.

When collecting data about conflicts at recess on the Conflicts at Recess Log (Appendix B), the teacher noted whether the conflict was one of six kinds: hands-on/physical aggression, name-calling/mean words, exclusion from play, “stealing” items/not sharing, not listening/cooperating, or other. Further, the researcher created anecdotal notes about the details of the conflict and its resolution. The researcher did not document every conflict since she was unable to witness them all. All disputes that students reported to the researcher, the only supervising adult, were noted. The researcher recorded some conflicts that children resolved independently. Once children returned to class, observations of on-task behaviors occurred after 5 minutes and at each 15-minute interval. These observations were recorded on the On Task Behaviour Tally Sheet After Non-extended/Extended Recess (Appendix C). On-task behaviors included:

- raising hand and waiting to be called on
- sitting still
- looking and listening to the speaker
- during Reading, engaging with reading (silent, buddy, or guided)

The afternoon portion of classroom learning that followed lunch recess consisted of a reading block that lasted thirty minutes. During this time, two guided reading groups met with the teacher in sequence while the other students read silently in their seats. When students settled into silent Reading with many on-task behaviors, the last five minutes of the reading time were buddy reading. On Mondays, Tuesdays, Thursdays, and Fridays, either Writing Workshop or Reading Workshop followed Reading. The Montessori Work Cycle occurred every morning. On Wednesdays, students had P.E. after Reading. On the Wednesday when they did not have extended recess, students also had a Montessori rhythm lesson before P.E.

At the end of the school day, students had five minutes to get ready to go home. One or two minutes before this time, students completed the On-task Self-Assessment (Appendix D). They wrote their names on their papers and answered “yes,” “sometimes,” or “no” to the following four statements: I raised my hand and waited to be called on; I sat still; I looked and listened to the speaker; during Reading (silent, guided, or buddy), I engaged with reading.

The teacher instructed that there were no right or wrong answers. Students placed their papers face-down on the teacher's desk immediately upon completion of the self-assessment. The teacher put the self-assessments and on-task behavior tally sheets in a bag to be taken home directly at the end of the school day. The self-assessments and on-task behavior tally sheets were both hard copies stored in a secure cabinet at home. The researcher kept the field notes per individual loose parts play events and the conflict at recess logs in a password-protected word document on her iPhone. At the end of each week, the teacher printed a hard copy of these data tools and added them to the home's secure cabinet.

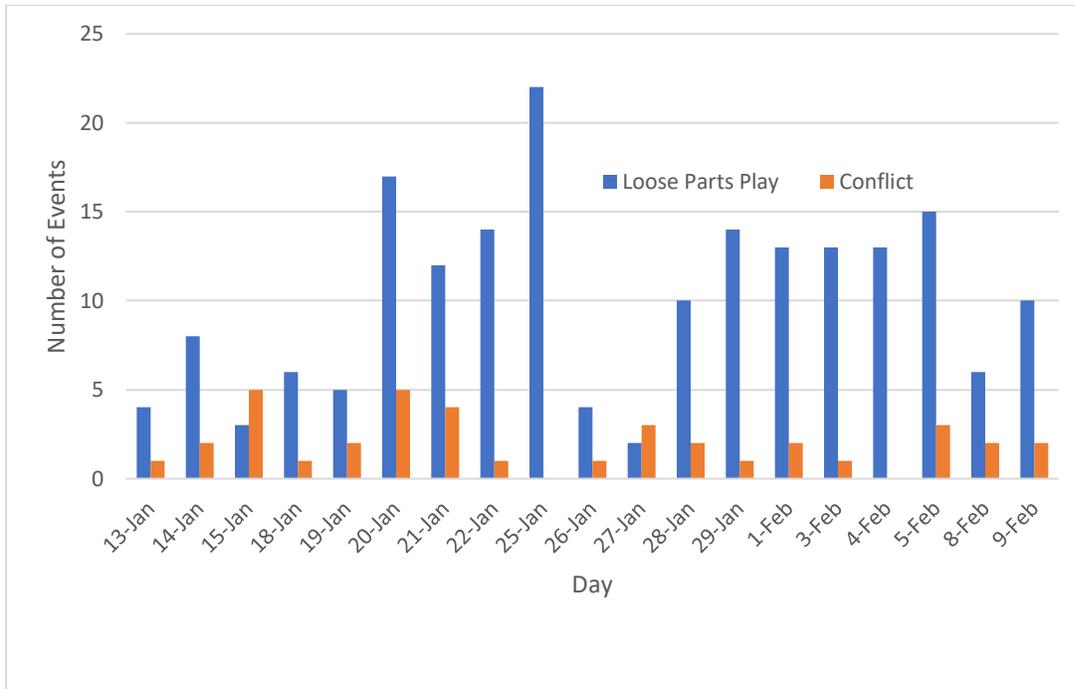
Analysis of Data

After the four weeks of the study concluded, one pre-intervention and three weeks of intervention, the researcher analyzed the data to see if there was any difference in students' behaviour. The data suggested some positive effects on behaviour due to the intervention.

Figure 1 indicates the number of loose parts play events in relation to the number of conflicts at recess.

Figure 1

Number of Loose Parts Play Events and Number of Conflicts



The lowest number of conflicts was zero on January 25 and February 4. This indicates an inverse relationship between the number of loose parts play events and the number of conflicts. The highest number of loose parts play events was twenty-two on January 25. On the day when students were engaged with the highest number of loose parts play events, there was also the lowest number of conflicts. The highest number of conflicts was five on January 15. In comparison, there were only three loose parts play events on that day. The data suggests that with fewer loose parts play events students experienced a greater number of conflicts.

In contrast, during the baseline week, the number of loose parts play events never exceeded eight or fell below three. In general, the number of loose parts play events and the

number of conflicts were similar during the baseline week. This data indicates that students self-regulated less effectively during the baseline week.

During the first week of intervention, there was a spike in both loose parts play events and conflicts on the first day of the intervention, indicating students were enthusiastic to engage with the loose parts, but that they also had some difficulty self-regulating at the onset of intervention. Comparatively, the number of conflicts steadily declined to zero on January 25. This data indicates that students gradually increased their ability to self-regulate as the intervention progressed. Additionally, the number of loose parts play events decreased after the first day of the intervention but increased after the second day, reaching the highest number on January 25. This data indicates that students peaked in their engagement with loose parts play four days after the intervention began. In contrast, there was a sharp drop in the number of loose parts play events between January 25 and January 26 revealing students did not consistently engage with the loose parts during their play.

During the second week of intervention, there was a further decrease in loose parts play events on January 27 suggesting that students lost some interest. On that day, the number of loose parts play events and the number of conflicts were close to each other, two and three respectively. Less engagement with loose parts play correlated with less student self-regulation. In contrast, on January 27, there was an increase in loose parts play events and a decrease in conflicts. This data suggests that greater loose parts play events had a positive impact on student self-regulation. The trend plateaued for the remainder of the second intervention week.

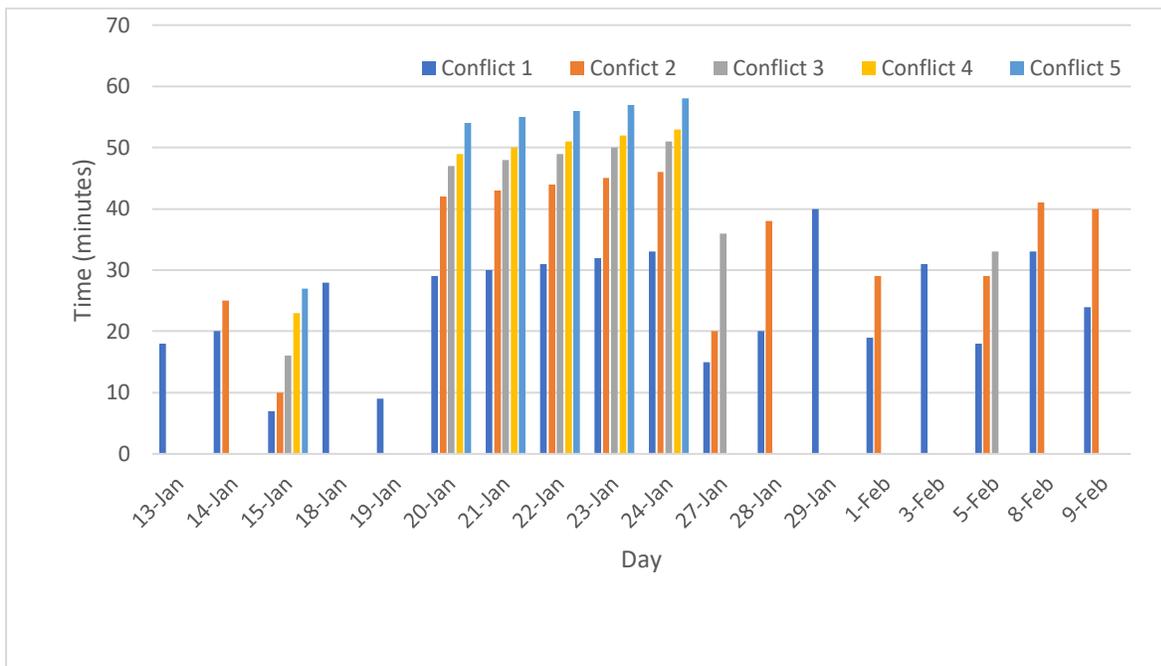
During the third week of intervention, there was a dip in loose parts play events on February 8 and shows that loose parts play engagement varied throughout the intervention. Finally, on February 5, the most significant number of conflicts for the week, peaked at three.

The number of loose parts play events on that day was fifteen. This is an example of a day when the number of loose parts play events did not seem to strongly correlate with student self-regulation.

Another aspect of the data that the researcher analyzed was the time of onset regarding conflicts during recess. Figure 2 indicates the time of onset of conflict after the beginning of recess. The most common time of onset of conflict was after 20 minutes of recess.

Figure 2

Time of Conflict



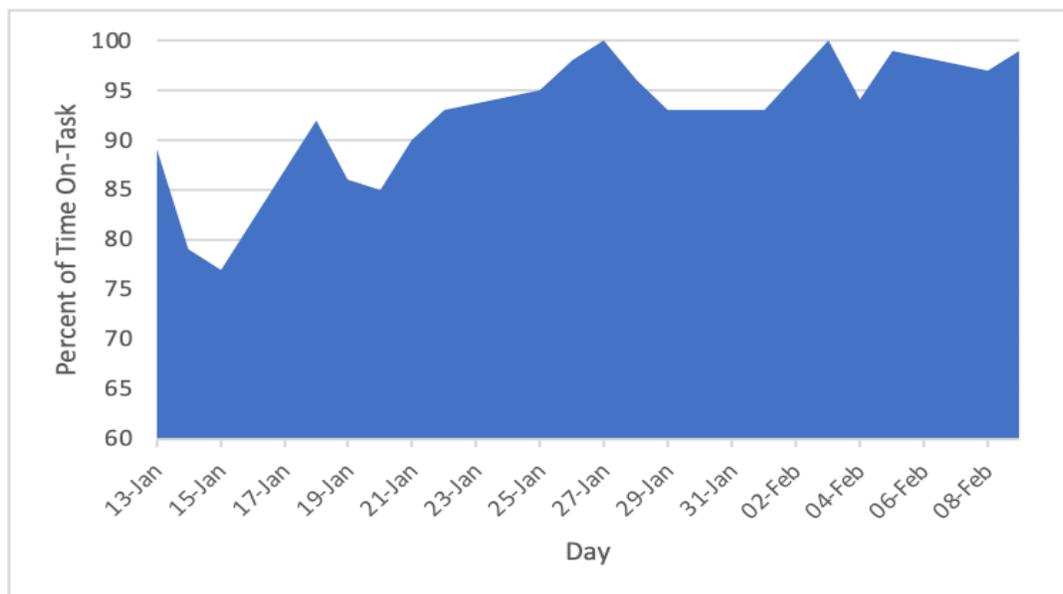
This data indicates that conflicts commonly took some time to develop. Similarly, the average time of conflict was after 28 minutes of recess. This is significant because when recess is only 30 minutes in duration, student conflicts extended into the classroom learning environment. Upon return to the classroom, students worked to resolve their conflicts, either independently or with the help of an adult. The shortest time of onset of conflict was seven minutes after the start of recess, which occurred on January 25. The longest time of onset of conflict was fifty-five

minutes, which occurred on January 21. This data indicates that conflicts spanned from early to late points during recess.

The analysis of the data also examined the average percentage of students who were on-task during the learning block that followed lunch recess (Figure 3). On-task behaviors constituted raising their hands and waiting to be called on, sitting still, looking and listening to the speaker, and engaging with reading during silent, buddy, or guided reading.

Figure 3

Percentage Time On-Task



The lowest percentage of students on-task was 77% on January 15 during the baseline week. In contrast, the highest average percentage of students on-task was 100% on January 27 and February 3. On both these days, students had P.E. in the last 30 minutes of class, and this may have influenced the on-task percentage results. However, the prior two P.E. days did not have similar results. This suggests that P.E. alone cannot explain the high scores on January 27 and February 3, indicating the intervention was at least partly responsible for the results. Finally,

after the first day of the intervention, the average percentage of students on-task never dipped below 90% during the experimental weeks, indicating that the intervention had a positive effect on student on-task behaviour.

Although the researcher gathered and analyzed the data from Appendix D, it was not included here since it revealed negligible information about the impact of the intervention. The data stemmed from Appendix 4 where students answered yes, sometimes, or no to four questions every day. The researcher assigned a score to each answer: yes denoted a score of three, sometimes denoted a score of two, and no denoted a score of one. The greatest score possible for a student on any day was twelve, and the lowest score possible for a student on any day was four. The researcher calculated averages for the class for each week. Although the data showed a minor increase in student perception of on-task behaviour, the data was not significant or reliable. Based on the researcher's observations, several students did not accurately self-assess. The data tool could have been more reliable if used with older children who are developmentally more able to self-assess accurately.

Action Plan

The word recess comes from the Latin *recessus*, meaning a going back or retreat. The purpose of this study was to investigate the impact of extended recess with loose parts play on student self-regulation during recess and on-task behavior after recess. During the intervention, students had access to various loose parts to incorporate into their play and an additional fifteen to thirty minutes of recess each day. The researcher used four data tools to assess student self-regulation and on-task behavior. Analysis of the data revealed that the intervention positively impacted student self-regulation and on-task behavior; however, the impact's strength was not dramatic.

The Importance of Recess as a Break

During this action research, it was evident that extended recess with loose parts play provided students a beneficial break. Although extended recess meant a decrease in instructional time, there was an increase in concentration, and the overall efficiency of learning was more optimal during the intervention weeks than during the baseline week.

Optimal Duration and Frequency of Recess

The optimal duration or frequency of recess is still not evident. Further research could shed light on the optimal balance between recess and instructional time. Students received 60-75 minutes of recess each day during this action research, similar to the 75-minutes of recess that students in Finland experienced, according to Chang and Coward (2015).

In contrast, this investigation did not support the claim Hanscom (2016) made that it took an average of 45 minutes for children to decide with whom they would play and what they would play. Nor did it support a further assertion from Hanscom (2016) that when children had a twenty-minute recess, the end of recess was when they decided with whom they would play. On the contrary, during both the baseline and intervention weeks, children did not take more than a few minutes to enter into play with one another. However, the additional recess time seemed to allow children to more fully enter their play schemes and have adequate time to resolve their conflicts, often with the supervising adult's support. One child with Autism Spectrum Disorder formed the exception: she generally only joined into co-operative play after thirty minutes of recess had elapsed. The intervention appeared to have a more dramatic positive impact on her since it was rare for her to join into co-operative play schemes before the intervention when she would often swing by herself or spend recess talking to the supervising adult. During the

intervention, she started to engage in loose parts play with her peers. For example, while a small group played pretend kitchen with the little cups and dishes, she would sit among them and collect gravel to fill the cups. Other times, she actively engaged with one other student in an imaginary store, selling or buying various pretend items. Extended recess with loose parts inspired this child to engage socially with her peers more frequently. Although it is clear that extended recess benefits students, it is not clear whether the benefits outweigh the cost of reduced instructional time.

Benefits of Freedom

One element of recess that benefitted students during this investigation was the freedom afforded by unstructured play. Children entered and exited play schemes at will. They felt the impact of their own decisions based on other students' responses, whether positive or negative, and they adjusted their behavior accordingly.

Benefits of Loose Parts

During this investigation, one benefit of play with loose parts was that it sparked and encouraged children's imaginations and creativity. There was evidence of a wide variety of imaginative and creative play during this action research.

Playschemes with loose parts ranged in breadth and depth. Examples included:

- “going fishing” with a stick attached to a rope
- making “hot chocolate” with cups and muddy water
- mining for "treasure" rocks using sticks and a small "treasure" box
- tying a rope to a tire and using it to fetch a water bottle from the top of a tall bin
- tying a rope to a tire, then having one child enter the tire at the waist while another child held onto the rope as they pretended to be horse and carriage

- tying ropes to a tire and attaching it to an existing metal play structure to create a swing
- setting up pinecones, sticks, stones, and other items along a bench acting as a “shop” of various products and currencies
- setting up a pretend house with bedding from coats, a kitchen replete with cups and plates, a closet with hangers and coats, and then playing family
- older children "training" younger children "dragons" using elaborate clapping signals and sticks that acted as wands
- creating "spy" headquarters with elaborate markings on gravel ground created with sticks, and then playing "spy"

Students engaged with loose parts play a plethora of ways, ranging from functional, collecting, and combining. This action research supports Gibson et al. (2017), drawing a connection between increased creative play and loose parts use. It also supports the idea that Hanscom (2016) stated that children could create complex and elaborate play schemes with access to loose parts.

Another benefit of play with loose parts observed was the development of children's leadership and social skills. Older children would often provide leadership and act as decision-makers in loose parts play, often directing and supporting the younger students. Younger students would often listen and obey. Similarly, this researcher found that students sharing the loose parts resources led to the collaboration between peers, supporting social skills development. In this study, one third grade child made friends with two first grade students during the intervention weeks. She delighted in creating and leading a "spy" playscheme with the two younger students she “trained” and commanded for “missions.” Previous to the intervention, this third grade student had not engaged in this type of play.

A third benefit of play with loose parts was developing children's executive function and self-regulation skills. In this action research, students experienced fewer conflicts with increased loose parts play events, perhaps due to greater inhibitory control stemming from pretend play.

Limitations

Before the baseline week, students had experienced extended recess from September - December. In the first weeks of January, while the researcher awaited approval to begin the action research, students experienced standard recess until the end of the baseline week. The previous months of extended recess with access to existing natural loose parts may have impacted the results of this intervention.

Further, the teacher of this class joined students at recess for the duration of this action research. Her presence and the assistance she provided in conflict resolution may have contributed to the intervention's success. It is not always possible for students to have constant access to a trusted supervising adult when they are playing during recess. Due to the small play area and established relationship students had with the researcher, it was straightforward for them to get the support they needed promptly.

Future Actions

This year has been unique: the world has been experiencing a COVID-19 pandemic. Due to health restrictions, students in British Columbia have experienced fewer opportunities for unstructured play than usual. It seemed fitting to investigate the positive impact of extended recess with loose parts play due to the context distinct to this year. The results were promising.

Moving forward, the teacher of this investigation plans to continue to offer the intervention to students on Mondays, Wednesdays, and Fridays for the remainder of the school year. It may not be possible to re-create the intervention in future years since the school-wide

recess structure is very different during a non-pandemic year. Namely, students normally have access to all other students at school and all play areas in the playground. Perhaps future research could occur at the school level, with provisions to loose parts made accessible to all the elementary students at the school as well. It is not clear whether the intervention is useful when there are more children on the playground, and this variable would be worth investigating.

Also, it is not clear whether extended recess at fewer intervals, such as Mondays, Wednesdays, and Fridays, would positively impact students without making as generous a compromise on instructional time. Perhaps extended recess on critical days, such as Mondays and Fridays, when children are generally less self-regulating, may be the most relevant days to implement the intervention. Further research could take place to determine the optimal recess frequency and duration.

Furthermore, certain loose parts seemed to draw student interest more than other loose parts. It is worth investigating what other items could incorporate into a future intervention that may result in more dramatic results. Perhaps, in the interest of holding students' attention, loose parts could be rotated throughout the school year, with some added as the year progressed and some removed. The intervention may be kept "fresh" for students and thereby more effective, as they may be more willing to engage with the play in novel and increasingly complex ways.

Finally, it is not apparent how effective the intervention is long-term, year after year. Worth investigating is whether children deepen their ability to self-regulate and stay on-task over a longer period and whether they engage in even more imaginative and co-operative play as a result.

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Appendix D

On-task Self-Assessment (once a day)

Name:	Date:
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Directions: There is no right or wrong answer. Circle your response.

1. I raised my hand and waited to be called on.	Yes Sometimes No
2. I sat still.	Yes Sometimes No
3. I looked and listened to the speaker.	Yes Sometimes No
4. During reading (silent, guided, or buddy), I engaged with reading.	Yes Sometimes No