Greater Rochester Summer Learning Association 2023 SummerLEAP Program Evaluation

Marjorie J Allan, MPH
Geri Cone
Joseph McFall, PhD

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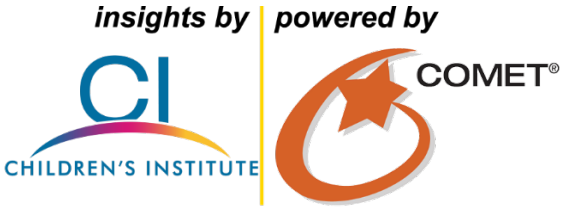

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ACKNOWLEDGEMENTS

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Authorship statement: Marjorie J Allan conducted the analysis and generated the report; Geri Cone downloaded and managed the data used for these analyses and provided technical assistance for data verification; Joseph McFall contributed to the design of this evaluation and provided review and editing for the final report.

INTRODUCTION

The Greater Rochester Summer Learning Association (GRSLA) is a 501(c) (3) not-for-profit formed by a consortium of school- and community-based organizations that offer summer learning activities for children to reduce or eliminate summer learning loss. Beginning in 1995 with at a single site, Horizons at Harley, the program experienced annual growth as efforts were made to serve more students and their families, residing in the City of Rochester, with evidence-based curricula and activities. GRSLA established partnerships with area funders and community-based organizations throughout the City of Rochester to create SummerLEAP (**L**earning **E**nrichment to **A**chieve **P**otential). As of 2011, the SummerLEAP program was serving over 300 students. As new community partners and funders were added, the program reached peak enrollment in years 2018 and 2019, when approximately 1500 students participated in SummerLEAP programs.

What is Summer Learning Loss?

Summer learning loss has been a topic in education for over 100 years. One of the earliest published studies took place in 1906 when educator William White measured students' knowledge following their school summer break. His objective was documenting the extent to which students forgot or "lost" information they had previously mastered. His findings showed students declining from their pre-summer learning levels (White, 1906).

More recently, an often-cited analysis that included 39 studies addressing how the long summer break, customary in the U.S. education system, affects children's learning contributed to our awareness and understanding of summer learning loss. Out of those 39 studies, a subset was selected for meta-analysis that presented evidence that learning losses over the summer months accounted for at least one-month of lost instruction, setting students back in meeting academic milestones (Cooper, 1996).

The Covid-19 pandemic required SummerLEAP to shift its service delivery model in response to new challenges facing lower-income families in the Greater Rochester area. A family-centered initiative was launched, entailing weekly home visits and assistance with basic needs along with educational enrichment for rising kindergarteners. During this period, GRSLA revised the scope of SummerLEAP to concentrate on serving Universal Pre-Kindergarten (UPK) and Extended Pre-Kindergarten (EPK) students. Several studies have demonstrated that without opportunities like SummerLEAP, students from lower income households experience two months of summer learning loss (Alexander & Boulay, 2016; McCombs et al., 2011; Cooper & Harris, 2003), negatively affecting their readiness for kindergarten.

Enrollment for SummerLEAP takes place in several early care and education sites including: Generations Child Care & Education, Ibero Early Childhood Services, Oregon Leopold Day Care Center, Rochester Childfirst Network, Volunteers of America, Baden Street Child

Development Center, City of Rochester R Centers, and Friendship Children's Center. The goal for 2023 enrollment was 225 UPK students from 15 classrooms and 90 EPK students from 6 classrooms, totaling 315 students from 21 classrooms. Students who participate in SummerLEAP take part in activities developed to maintain or enhance their academic, social emotional, and physical activity learning during summer months when school is not in session. Students are assessed at various times throughout the school year and again while participating in SummerLEAP to monitor changes occurring specifically across academic and social emotional domains. Assessment scores are used to evaluate children's responses to the intervention.

Parents/caregivers receive information about SummerLEAP program components during recruitment and registration. They are informed about the range of academic and non-academic program activities offered to SummerLEAP participants. In addition, parents are advised that daily attendance is essential to their child reaping the full benefit of program participation. To further emphasize the need for consistent attendance, program staff inquire about summer vacation or other plans that might conflict with the SummerLEAP schedule. Parents/caregivers are encouraged to put off registration if it is unlikely that their child will be able to attend every session.

Evaluation questions

The evaluation aims to measure the effectiveness of the SummerLEAP program in preventing or reducing summer learning loss among program participants and enhancing school readiness among kindergarten-age participants. Assessment scores from both the Classroom Observation Record and the Teacher-Child Rating Scale are collected for students at two or more times throughout the school year. In fall/early winter, students' assessment scores provide a baseline level of both academic achievement as well as indicators of school adjustment, which is highly correlated with later school success. These scores can then be compared with subsequent assessments completed for students in spring and, for the SummerLEAP participants, at the end of the SummerLEAP program.

Hypotheses

- Correspondingly, we hypothesize that participating students will exhibit less summer learning loss than their peers who did not participate in SummerLEAP.
- In addition, we expect students who participate in the SummerLEAP program to retain or continue their growth relating to school adjustment, a marker for social emotional development.
- We further hypothesize that students who participate in SummerLEAP will be better prepared for kindergarten than non-participating students.

METHODS

Sample

Data sharing agreements between GRSLA and Children's Institute allow the evaluators to access students' assessment scores from Rochester City School District (RCSD) data files. We received a roster of all students who participated in the 2023 SummerLEAP program and matched them with school records. In cases where SummerLEAP students lacked student identification numbers, attempts were made to match by name and birthdate. Even with thorough attempts to locate SummerLEAP students within RCSD records, a substantial number could not be located and are therefore not included in this report. Therefore, this report summarizes results from assessments of 279 of the 315 SummerLEAP participants; sixty 3-year-olds going into pre-kindergarten (EPK go UPK) and 219 4-year-old UPK children going into kindergarten (UPK go K). All participated in the 6-week SummerLEAP program offered by eleven local community-based organizations and administered by the Greater Rochester Summer Learning Association (GRSLA), during the months of July and August 2023.

For comparison purposes, we included data from students who attended schools where SummerLEAP recruitment took place but who did not participate in SummerLEAP programs. This provided a sample of 305 EPK and 310 UPK students. All available data is included for the analyses presented in this report. We analyzed the EPK student data separate from the UPK student data due to the developmental differences seen between these two age groups.

Procedures

During the school year, teachers complete assessments on their EPK and UPK students using several measures. The data from these assessments is provided to the Comet, LLC data management system due to a longstanding data sharing agreement between RCSD, CI, and Comet. Children who participate in SummerLEAP programs are assessed by the summer program teachers using similar measures. Data from the summer assessments is also managed using Comet, making records from both RCSD and SummerLEAP accessible for the evaluation.

Student data records were extracted and downloaded from the Comet system to construct the evaluation database. A verification check was provided by Children's Institute's Comet expert to ensure that all available data was included. We created a grouping variable to identify SummerLEAP versus comparison students. Measurement took place at several points during the school year and, for the SummerLEAP students, again during the program period. We used assessment dates to identify scores from Fall, Spring, and Summer.

An initial analysis provided frequencies for socio-demographic characteristics of the students. This was followed by comparisons between SummerLEAP versus non-SummerLEAP students' assessment scores over time. Statistical tests were conducted to test whether students who

participated in SummerLEAP had different assessment outcomes than the comparison group students.

MEASURES

To test our hypotheses, the evaluation considered the scores students receive when teachers complete COR advantage assessments. These assessments rely on teachers' observations and insights regarding development and learning. The COR advantage is described in greater detail below.

Learning loss is determined by calculating changes in students' COR Advantage scores from the beginning of the school year (fall) to each successive assessment period (winter, spring, and for students participating in the SummerLEAP program, end of summer).

The COR advantage also provides an assessment of kindergarten readiness that represents a composite of the subscale scores. Criteria for kindergarten readiness are also described below.

Children's Institute and many of our partners rely on the Teacher-Child Rating Scale (T-CRS) to measure several key domains that describe children's school adjustment. As part of this evaluation, we are comparing students' T-CRS scores along with changes in scores throughout the school year.

Child Observation Record (COR Advantage)

Classroom Observation Record (COR Advantage) information (see below) was collected at four points: Fall 2022, Winter 2023, Spring 2023, and Summer 2023, near the end of the summer program. The COR Advantage is a developmentally appropriate, standards-based measure that assesses children's academic (language, literacy, mathematics, & science), social, and motor competencies. This current iteration of the COR is aligned with the NYS Common Core Learning Standards. Teachers record their observations of students' functioning using the instrument's 34 items. Items are scored on 7-point developmentally sequenced scales in which each point represents a specific level of children's growth along a developmental continuum.

Psychometric properties of the COR Advantage were analyzed, yielding a Cronbach's alpha=.963 for all 34 items, and deemed sound (Cahalan, 2015). Additional analyses from this study obtained Spearman-Brown coefficients between .681 and .858 for the COR domains and Spearman-Brown index=.948 for the 34 COR Advantage items, reinforcing this instrument's use for monitoring children's developmental change over time.

COR Advantage subscales include:

- Approaches to Learning (*e.g.*, Initiative and Planning; Reflection)
- Social and Emotional Development (*e.g.*, Emotions; Conflict Resolution)
- Physical Development and Health (*e.g.*, Gross-motor skills; Personal Care and Healthy Behavior)
- Language, Literacy, and Communication (*e.g.*, Speaking; Alphabetic Knowledge)
- Mathematics (*e.g.*, Measurement; Patterns)
- Creative Arts (*e.g.*, Art; Music)
- Science and Technology (*e.g.*, Observing and Classifying; Natural and Physical World)
- Social Studies (*e.g.*, Geography; History)
- Overall: The overall score is derived by computing the average scores of all 34 items.

Kindergarten readiness

Children are determined to be kindergarten-ready if their average scores for each domain equal 3.75 or greater and their overall score, calculated as the average of all domain scores combined) equals 4.0 or higher. Students must have received scores for a minimum of 75% of the COR Advantage items in order for kindergarten readiness to be assessed (HighScope, 2014).

Kindergarten readiness, denoted as "not ready" or "ready", is evaluated at several points during the school year using the COR Advantage. In Table 9 we see the proportion of UPK students deemed "ready", increasing from 2% at the time of fall assessments to over 50% following SummerLEAP participation.

The Rochester City School District (RCSD) and RECAP used the COR Advantage during the 2022-2023 school year to assess students participating in the Expanded Prekindergarten (EPK) and Universal Prekindergarten (UPK) programs. Teachers completed the instrument in the fall, winter, and spring to monitor student progress and document outcomes. GRSLA used the COR Advantage to allow comparisons between prekindergarten scores collected by RCSD and RECAP with summer program scores. GRSLA does not have access to individual prekindergarten student scores, and RCSD does not have access to individual SummerLEAP student scores. Children's Institute had permission to access both datasets for evaluation purposes. Only aggregated results are reported in this report to protect students' privacy.

Teacher-Child Rating Scale

The Rochester City School District adopted a revised version of the Teacher-Child Rating Scale (T-CRS) to conduct screening and follow-up assessments of their students' school adjustment and social emotional status. Originally, the T-CRS contained 32-items that teachers would rate for students in their classrooms, assessing four domains with 8 items each. Following updated scale development and measure refinement, Children's Institute revised the T-CRS and created the T-CRS short form (TCRS-SF). Two versions of the shorter measure are available (a and b).

Schools in RCSD use TCRS-SF-b, a 16-item assessment of the domains represented in the longer form. Several experimental items have been added to the TCRS-SFb, however they are still under review and not yet scored and reported. The TCRS-SFb provides scores for the following domains:

- Task orientation (*e.g.*, Functions well even with distractions; Poorly motivated to achieve)
- Behavior control (*e.g.*, Copes well with failure; Disruptive in class)
- Assertiveness (*e.g.*, Expresses ideas willingly; Anxious, worried)
- Peer social (*e.g.*, Has many friends; Lacks social skills with peers)

Items are scored on 5-point Likert-type scale to indicate the extent to which the teacher agrees that the item describes the child. Scores are computed such that higher scores are indicative of better school adjustment and social emotional status.

Teachers completed the TCRS-SFb in the fall and spring of prekindergarten and near the end of the summer program. Administration of the TCRS-SFb at these times permits assessment of the growth of individual students. We compared scores for the EPK students who would be entering UPK in Fall, 2023, referred to as EPK go UPK, and the UPK students who would be transitioning to kindergarten in Fall, 2023, called UPK go K, with RCSD students of the same age who were not participants of the 2023 SummerLEAP program. Differences in students' scores at each measurement time as well as differences in the amount of change reported over time were examined for students who later would be in the SummerLEAP group with their respective comparison groups.

Program Attendance

SummerLEAP program teachers recorded students' daily attendance. This information was used to compare the end-of-program COR scores for students with consistent versus inconsistent program attendance.

Throughout this report, we consider findings with probabilities less than or equal to 0.05 as being statistically significant, meaning that there is very little likelihood that the differences occurred by chance. Statistical comparisons with probabilities greater than 0.05 are regarded as not statistically significant and noted as "*ns*". The analyses were conducted to test the hypothesis that summer program participation reduced learning losses typically observed between the end of the school year and the point when school resumes in the fall.

RESULTS

The initial analyses looked at the distribution of students who did and students who did not participate in the SummerLEAP program. These comparisons tested for systematic and statistically significant sociodemographic differences between the two groups. The first of these comparisons is presented in Table 1.

Table 1. Demographic characteristics of EPK summer students and EPK comparison students enrolled at sites where summer program recruitment occurred

	GRSLA EPK Students (*N*=60)		Comparison EPK Students (*N*=305)		
Demographic Characteristic	**#**	**%**	**#**	**%**	**χ^2, *p***
Male	17	28%	157	51%	10.76, (.001)
Asian	2	3%	8	3%	0.09, *ns*
Black	48	80%	233	76%	0.37, *ns*
Latino/a/Hispanic	10	17%	76	25%	1.89, *ns*
Native	1	2%	3	1%	0.22, *ns*
Other Pacific Islander	0	0%	1	<1%	0.20, *ns*
White	7	12%	60	20%	2.14, *ns*

Note: Students may have more than one race/ethnicity identified, total may not equal 100%.

There was a statistically significant greater proportion of male students in the comparison group, 51% versus 28% in the SummerLEAP group. There were no other statistically significant demographic characteristics between SummerLEAP and comparison students.

Table 2. Demographic characteristics of UPK summer students and UPK comparison students enrolled at sites where summer program recruitment occurred.

Demographic Characteristic*	GRSLA UPK Students (*N*=213)		Comparison UPK Students (*N*=310)		
	#	%s	#	%	χ^2, *p*
Male	118	54	143	46	*ns*
Asian	6	3	8	3	*ns*
Black	167	76	223	72	*ns*
Latino/a/Hispanic	61	28	96	31	*ns*
Native	1	<1	6	2	*ns*
Other Pacific Islander	0	0	4	1	*ns*
White	26	12	69	22	8.58, (.004)

Note: students may have more than one race/ethnicity identified, total may not equal 100%

** RCSD data unavailable for English Language Learner, Economically Disadvantaged, and Student with Disability*

Among UPK students, there was statistically significantly greater proportion of white students in the comparison group than in the SummerLEAP group. No other statistically significant demographic differences were observed between the two groups.

COR Advantage Comparisons – EPK Go UPK Groups

We compared COR Advantage results from two times of EPK testing, and fall-to-spring change, for students in the EPK go UPK summer program and the EPK comparison group in Table 3. Note: Table 3 is presented in three sections (A-C) to show differences between the two groups, SummerLEAP and Comparison, from two assessment periods (fall and spring) and changes in scores from fall to spring.

Table 3A. Fall assessment: COR Advantage comparisons between the EPK summer group and the EPK comparison group.

Fall 2022 (9/2022-12/2022)	GRSLA EPK students			Comparison EPK students				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	52	2.68	0.74	184	2.33	0.77	2.90	.002
Social emotional	52	2.49	0.76	184	2.26	0.79	1.92	.028
Physical development	52	3.14	0.65	184	2.85	0.76	2.47	.007
Language/literacy	52	2.22	0.59	184	2.14	0.59	0.83	*ns*
Mathematics	51	2.19	0.52	184	2.08	0.67	1.09	*ns*
Creative arts	51	2.58	0.67	184	2.22	0.75	3.11	<.001
Science/technology	51	2.45	0.84	184	2.06	0.73	3.20	<.001
Social studies	51	2.43	0.75	184	2.08	0.69	3.14	<.001
Overall	51	2.52	0.57	184	2.25	0.60	2.85	.002

Bolding indicates subscales with statistically significant differences between SummerLEAP and Comparison students' scores.

Differences were seen between (eventual) SummerLEAP students' and Comparison students' on their Approaches to Learning, Social emotional, Physical development, Creative arts, Science/technology, and Social studies scores. EPK students who would later participate in the SummerLEAP program began the school year with higher scores on these six subscales and their overall COR scores than similar EPK students who did not later participate in SummerLEAP.

Table 3B. Spring assessment: COR Advantage comparisons between the EPK summer group and the EPK comparison group.

Spring 2023 (2/2023-6/2023)	GRSLA EPK students			Comparison EPK students				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	57	3.84	0.85	215	3.33	0.95	3.66	<.001
Social emotional	57	3.87	0.77	213	3.40	0.98	3.37	<.001
Physical development	58	4.12	0.57	215	3.87	0.88	2.08	.019
Language/literacy	57	3.57	0.59	213	3.06	0.77	4.66	<.001
Mathematics	57	3.38	0.54	214	3.05	0.75	3.04	<.001
Creative arts	58	3.87	0.62	215	3.41	1.02	3.39	<.001
Science/technology	57	3.66	0.68	214	3.24	0.93	3.29	<.001
Social studies	57	3.57	0.72	212	3.33	0.97	3.20	.038
Overall	57	3.74	0.56	214	3.34	0.82	3.46	<.001

Bolding indicates subscales for which statistically significant differences were found.

Assessments completed during the spring showed the EPK children who were soon to become SummerLEAP students receiving statistically significantly higher scores in all of the COR domains than their counterparts in the Comparison group.

Table 3C. Fall to Spring change scores: COR Advantage comparisons between the EPK summer group and the EPK comparison group.

Change in scores from Fall to Spring	GRSLA EPK students			Comparison EPK students				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	51	1.18	0.78	179	0.97	0.76	1.68	.047
Social emotional	51	1.39	0.86	178	1.11	0.78	2.17	.016
Physical development	52	0.94	0.65	179	1.00	0.71	-0.56	*ns*
Language/literacy	51	1.38	0.78	177	0.91	0.62	4.46	<.001
Mathematics	50	1.20	0.61	178	0.98	0.60	2.29	.012
Creative arts	51	1.28	0.77	179	1.16	0.78	0.95	*ns*
Science/technology	50	1.17	0.73	178	1.14	0.71	0.25	*ns*
Social studies	50	1.14	0.73	177	1.23	0.80	-0.73	*ns*
Overall	50	1.21	0.55	178	1.07	0.53	1.64	*ns*

Bolding indicates subscales with statistically significant scores.

Changes in scores from Fall to Spring were statistically significantly higher for EPK students who would become SummerLEAP participants than the Comparison group students for four of eight subscales (Approaches to learning, Social emotional, Language/literacy, and Mathematics). No statistically significant differences were seen between the two groups on the other four COR subscales (Physical development, Creative arts, Science/technology, and Social studies) nor was there a difference between changes in students' overall COR scores.

COR Advantage Comparisons – UPK Go K Groups

A parallel set of analyses was conducted to compare students in the UPK go K COR Advantage scores from two administrations of UPK assessment, and changes in scores from fall-to-spring. These results are shown in Table 4. Once again, Table 4 is presented in sections (A-C) so that the scores and analyses for each assessment period are presented separately, followed by comparisons between the eventual SummerLEAP students and Comparison group students on changes in their COR scores from fall to spring.

Table 4A. Fall assessment: COR Advantage comparisons between the UPK summer group and the UPK comparison group.

Fall 2022 (9/2022-12/2022)	GRSLA UPK students			Comparison UPK students				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	162	2.97	0.76	184	2.92	0.78	0.75	*ns*
Social emotional	147	3.02	0.74	168	3.03	0.79	-0.07	*ns*
Physical development	164	3.49	0.74	184	3.37	0.80	1.75	*ns*
Language/literacy	151	2.89	0.64	172	2.83	0.72	0.90	*ns*
Mathematics	152	2.78	0.71	174	2.74	0.70	0.63	*ns*
Creative arts	164	3.07	0.90	184	3.04	0.87	0.37	*ns*
Science/technology	162	2.83	0.79	183	2.84	0.80	-0.24	*ns*
Social studies	153	2.94	0.77	175	2.84	0.77	1.60	*ns*
Overall	153	3.01	0.66	175	2.95	0.68	1.02	*ns*

No statistically significant COR score differences were seen between the UPK students who would later participate in SummerLEAP and students in the Comparison group at baseline (fall, 2023).

Table 4B. Spring assessment: COR Advantage comparisons between the UPK summer group and the UPK comparison group.

Spring 2023 (2/2023-6/2023)	GRSLA UPK students			Comparison UPK students				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	180	4.39	0.77	187	4.41	0.76	-0.17	*ns*
Social emotional	172	4.34	0.82	175	4.37	0.77	-0.37	*ns*
Physical development	176	4.82	0.84	181	4.81	0.88	0.09	*ns*
Language/literacy	170	4.07	0.74	169	4.11	0.70	-0.50	*ns*
Mathematics	176	4.22	0.82	171	4.32	0.62	-1.23	*ns*
Creative arts	**173**	**4.51**	**0.71**	**177**	**4.64**	**0.77**	**-1.74**	**.042**
Science/technology	172	4.23	0.84	179	4.34	0.74	-1.30	*ns*
Social studies	175	4.38	0.87	182	4.56	0.76	-0.84	*ns*
Overall	170	4.37	0.69	170	4.44	0.61	-0.96	*ns*

Bolding denotes statistically significant difference.

COR scores for UPK students who would later participate in the SummerLEAP program did not differ from those received by students in the comparison group during the spring assessment with the exception of the Creative arts subscale. Students from the Comparison group received statistically significantly higher scores than the (eventual) SummerLEAP students for Creative arts.

Table 4C. Fall to Spring Change Scores: COR Advantage comparisons between the UPK summer group and the UPK comparison group.

Change in scores from Fall to Spring	GRSLA UPK students			Comparison UPK students				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	141	1.49	0.71	155	1.50	0.70	-0.91	*ns*
Social emotional	125	1.42	0.69	134	1.45	0.65	-0.42	*ns*
Physical development	138	1.39	0.86	150	1.42	0.86	-0.28	*ns*
Language/literacy	129	1.31	0.60	138	1.29	0.56	0.25	*ns*
Mathematics	131	1.64	0.67	141	1.66	0.60	-0.30	*ns*
Creative arts	137	1.49	0.84	150	1.57	0.88	-0.80	*ns*
Science/technology	133	1.45	0.73	149	1.46	0.66	-0.12	*ns*
Social studies	135	1.53	0.82	149	1.57	0.83	-0.45	*ns*
Overall	131	1.46	0.59	142	1.49	0.55	-0.58	*ns*

Fall to Spring changes in COR scores showed no statistically significant differences between the future SummerLEAP and the Comparison group students.

T-CRS Comparisons – EPK go UPK Groups

We compared T-CRS results from two times of EPK testing, and fall-to-spring change, for students in the EPK go UPK summer program and the EPK comparison group in Table 5. As with the COR scores, the T-CRS tables are presented in sections (A-C) so that group comparisons from fall assessments and spring assessments can be seen separately, followed by change score (fall to spring) comparisons.

Table 5A. Baseline (Fall) Assessment: T-CRS comparisons between the future EPK SummerLEAP students and the EPK comparison group students

Fall 2022	GRSLA EPK students			Comparison EPK students				
T-CRS scale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Task orientation	46	12.07	3.52	172	12.10	3.73	-0.64	*ns*
Behavior control	46	10.65	3.71	172	11.28	4.07	-0.95	*ns*
Assertiveness	46	13.33	4.32	172	13.09	4.11	0.35	*ns*
Peer social	46	15.20	3.06	172	15.30	3.28	-0.19	*ns*

Table 5B. Spring Assessment: T-CRS comparisons between the future EPK SummerLEAP students and the EPK comparison group students

Spring 2023	GRSLA EPK students			Comparison EPK students				
T-CRS scale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Task orientation	48	12.88	3.49	192	12.73	4.00	0.23	*ns*
Behavior control	47	11.32	4.06	191	11.59	3.61	-0.44	*ns*
Assertiveness	48	15.19	3.49	192	14.07	3.96	1.93	*ns*
Peer social	48	16.42	2.74	192	15.77	3.42	1.38	*ns*

There were no statistically significant differences between the EPK go UPK future SummerLEAP students and the Comparison group students at entry into and at departure from the EPK program.

Table 5C. Score Changes from Fall to Spring: T-CRS comparisons between the future EPK SummerLEAP students and the EPK comparison group students

Fall to Spring change	GRSLA EPK students			Comparison EPK students				
T-CRS scale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Task orientation	40	0.65	2.42	140	0.39	3.13	1.38	*ns*
Behavior control	39	0.46	3.60	139	0.24	2.81	0.40	*ns*
Assertiveness	40	1.58	3.04	140	0.97	2.88	1.15	*ns*
Peer social	40	1.18	2.74	140	0.26	2.87	1.78	*ns*

No differences were seen in the fall to spring changes in T-CRS scale scores.

T-CRS Comparisons – UPK go K Groups

T-CRS results from two times of UPK testing, and fall-to-spring change, are compared for students in the UPK go K summer program and the UPK comparison group in Table 6, presented in three sections (A-C) allowing each set of comparisons to be viewed separately.

Table 6A. Fall T-CRS Assessments: Comparisons Between the UPK SummerLEAP students and UPK comparison students.

Fall 2022	GRSLA UPK students			Comparison UPK students				
T-CRS scale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*P*
Task orientation	156	12.97	3.67	214	12.49	3.90	1.19	*ns*
Behavior control	156	12.36	4.01	214	12.42	3.70	-0.15	*ns*
Assertiveness	**156**	**14.74**	**3.11**	**214**	**13.85**	**3.85**	**2.37**	**.009**
Peer social	156	16.01	2.68	214	15.65	2.99	1.17	*ns*

Bolding denotes statistically significant difference.

Differences were observed for Assertiveness scores at entry into UPK in the fall, with the eventual SummerLEAP students scoring nearly 1 point higher than the Comparison group students.

Table 6B. Spring T-CRS Assessments: Comparisons Between the UPK SummerLEAP students and UPK comparison students.

Spring 2022	GRSLA UPK students			Comparison UPK students				
T-CRS scale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Task orientation	138	13.54	3.83	167	12.89	4.14	1.41	*ns*
Behavior control	138	12.39	4.31	166	12.07	4.12	0.67	*ns*
Assertiveness	**138**	**15.65**	**3.43**	**167**	**14.60**	**4.05**	**2.41**	**.008**
Peer social	138	16.18	3.17	167	15.64	3.74	1.34	*ns*

Bolding denotes statistically significant difference.

The difference seen for Assertiveness scores persisted during the spring assessment, with future SummerLEAP students once again receiving higher scores than students in the Comparison group.

Table 6C. Change from Fall to Spring T-CRS Assessment Scores: Comparisons Between the UPK SummerLEAP students and UPK comparison students.

Fall to Spring change	GRSLA UPK students			Comparison UPK students				
T-CRS scale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Task orientation	**124**	**0.98**	**3.22**	**153**	**0.32**	**2.80**	**1.80**	**.04**
Behavior control	**124**	**0.54**	**3.45**	**153**	**-0.26**	**3.06**	**2.05**	**.02**
Assertiveness	124	1.06	2.74	153	0.91	2.72	0.45	*ns*
Peer social	**124**	**0.52**	**2.52**	**153**	**-0.03**	**2.57**	**1.79**	**.04**

Bolding denotes statistically significant difference.

Changes in T-CRS scores from fall to spring were statistically significantly higher for Task orientation, Behavior control, and Peer social skills among future SummerLEAP students than for students in the Comparison group.

SummerLEAP Program Attendance

Consistent attendance is known to improve students' learning outcomes, particularly among children enrolled in early care and education programs. The SummerLEAP program shared their students' attendance records for this evaluation. On average, students attended 22.6 (80.6%) of the 28 total possible program days. The percentage of days attended ranged between 21% and 100%, with one outlier who attended fewer than 5 days.

We compared spring to summer change in COR scores for SummerLEAP students with 90% or greater attendance with students who had less than 90%. Table 7 shows these comparisons for EPK students who became SummerLEAP participants.

Table 7. Comparisons Between EPK SummerLEAP "High Attenders" and "Lower Attenders" on COR Spring to Summer Score Changes.

EPK Fall to Spring change scores	GRSLA High Attenders (≥ 90% of sessions)			GRSLA Lower Attenders (<90% of sessions)				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	32	1.27	0.88	29	1.00	0.52	-1.45	*ns*
Social emotional	32	1.38	0.91	29	1.30	0.76	-0.39	*ns*
Physical development	32	0.90	0.63	30	0.97	0.64	0.44	*ns*
Language/literacy	32	1.45	0.81	29	1.19	0.57	-1.43	*ns*
Mathematics	32	1.13	0.59	28	1.13	0.52	-0.02	*ns*
Creative arts	32	1.19	0.73	29	1.30	0.70	0.58	*ns*
Science/technology	32	1.24	0.78	28	1.01	0.65	-1.25	*ns*
Social studies	32	1.06	0.71	28	1.04	0.74	-0.14	*ns*
Overall	32	1.20	0.59	28	1.12	0.46	-0.62	*ns*

There were no statistically significant differences between GRSLA EPK students who attended 90% or more SummerLEAP sessions ("High Attenders") and GRSLA EPK students who attended less than 90% of SummerLEAP sessions ("Lower Attenders")

The same comparisons were completed for GRSLA UPK students, again categorizing students as "High Attenders" or "Lower Attenders" using the same cutpoints (≥ 90% and <90% respectively). Table 8 presents the results of those comparisons.

Table 8. Comparisons Between UPK SummerLEAP "High Attenders" and "Lower Attenders" on COR Spring to Summer Score Changes.

UPK Fall to Spring change scores	GRSLA High Attenders (≥90% of sessions)			GRSLA Lower Attenders (<90% of sessions)				
COR Subscale	*N*	*Mean*	*S.D.*	*N*	*Mean*	*S.D*	*t*	*p*
Approaches to learning	42	1.48	0.64	78	1.50	0.79	0.14	*ns*
Social emotional	36	1.38	0.78	69	1.42	0.64	0.32	*ns*
Physical development	40	1.27	0.89	77	1.49	0.88	1.32	*ns*
Language/literacy	37	1.26	0.54	72	1.35	0.66	0.70	*ns*
Mathematics	37	1.75	0.55	74	1.67	0.75	-0.56	*ns*
Creative arts	40	1.53	0.84	76	1.51	0.90	-0.07	*ns*
Science/technology	**38**	**1.28**	**0.69**	**75**	**1.59**	**0.73**	**2.16**	**0.02**
Social studies	38	1.57	0.71	76	1.62	0.89	0.32	*ns*
Overall	38	1.43	0.56	73	1.52	0.62	0.68	*ns*

Bolding indicates statistical significance.

In this instance, there was one statistically significant difference between the "Higher Attenders" and the "Lower Attenders". The "Lower Attenders" had higher Fall to Spring change scores for Science/technology that the students who attended ≥90% of the SummerLEAP sessions.

Spring to Summer Change – EPK Students

Students who participate in the SummerLEAP program are assessed using the COR Advantage measure during the summer. These COR scores, collected near the end of the summer program, are analyzed by calculating Spring to Summer changes and conducting one sample t-tests to determine if the score changes reach statistical significance. Students from the comparison group are not included in these analyses since they are not assessed during the summer months when school is not in session.

Table 9 presents the results of COR change-score analyses for the EPK go UPK SummerLEAP students. One sample t-tests were conducted to test for statistical significance of COR change scores. Effect size is also presented. Figure 1 show COR scores over time for EPK go UPK

summer program students. Each subscale is depicted separately in Figure 1, thus this figure is presented as Figure 1A through Figure 1I.

Table 9. COR spring to summer change scores for EPK students

COR Subscale	*N*	*Mean*	*S.D.*	*t*	*p*
Approaches to learning	**64**	**1.23**	**0.84**	**11.85**	<.001
Social emotional	**64**	**1.53**	**0.84**	**14.67**	<.001
Physical development	**64**	**0.96**	**0.73**	**10.45**	<.001
Language/literacy	**64**	**1.33**	**0.65**	**16.29**	<.001
Mathematics	**63**	**1.24**	**0.66**	**14.93**	<.001
Creative arts	**63**	**1.43**	**0.90**	**12.67**	<.001
Science/technology	**63**	**1.35**	**0.86**	**12.49**	<.001
Social studies	**63**	**1.40**	**0.81**	**13.66**	<.001
Overall	**64**	**1.31**	**0.60**	**17.41**	<.001

Bolding denotes statistical significance.

Statistically significant changes in COR were seen for the EPK go UPK (3-year-old) students in all COR Advantage subscales, indicating improvements in each of the measured domains.

Figure 1A. COR Approaches to Learning: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

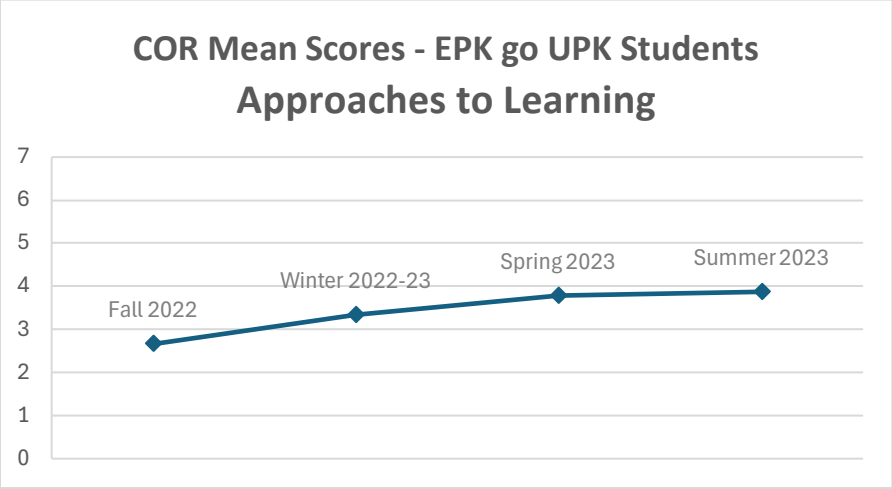


Figure 2B. COR Social Emotional Development: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

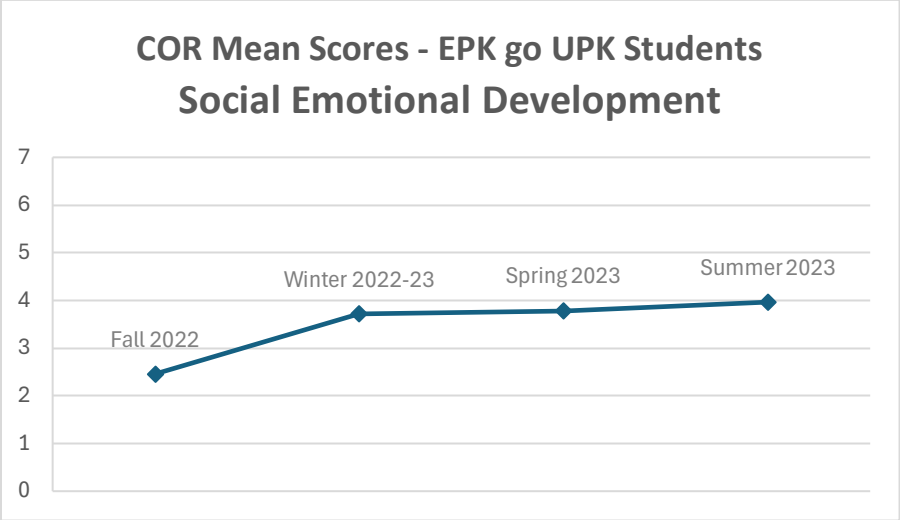


Figure 3C. COR Approaches to Learning: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

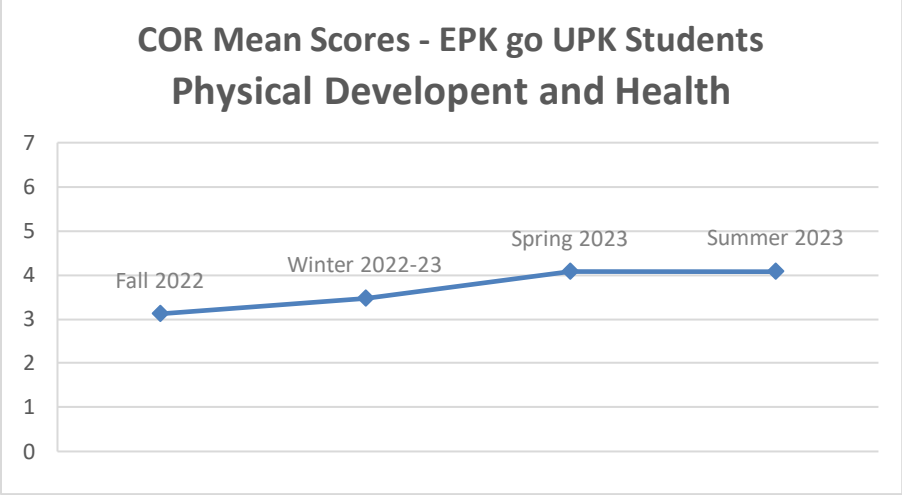


Figure 4D. COR Language/Literacy: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

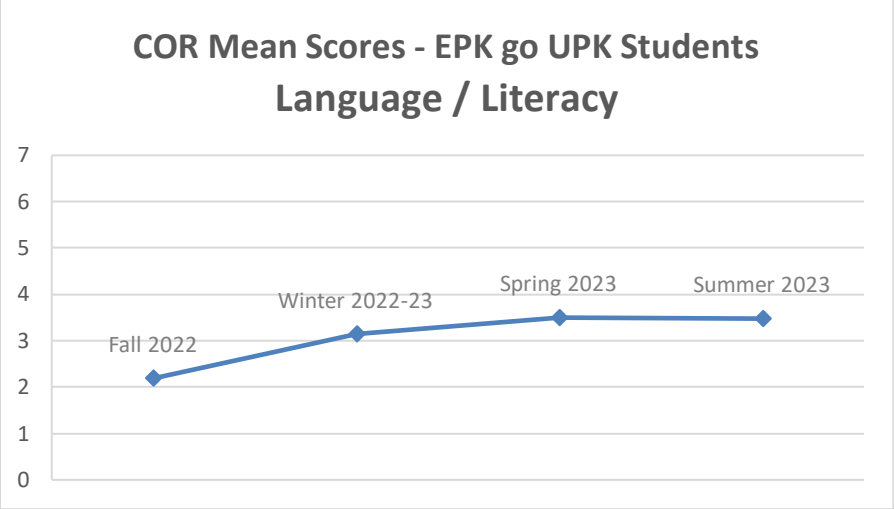


Figure 5E. COR Mathematics: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

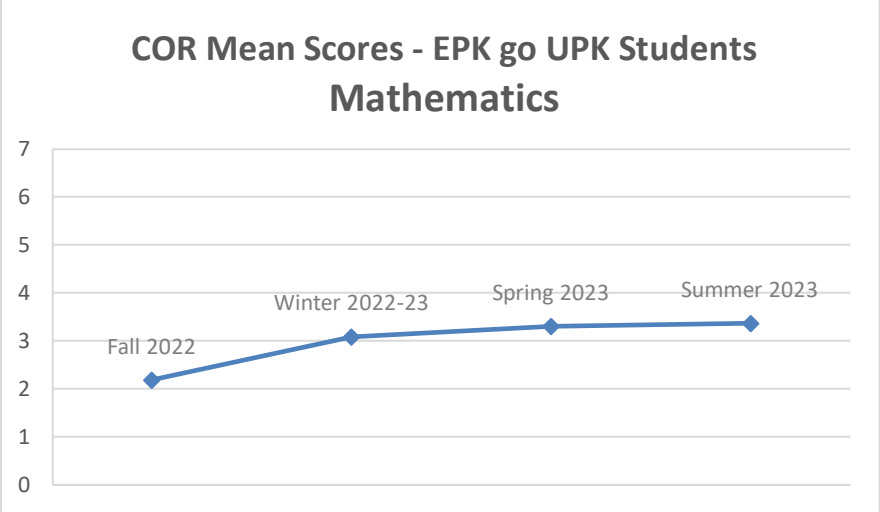


Figure 6F. COR Creative Arts: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

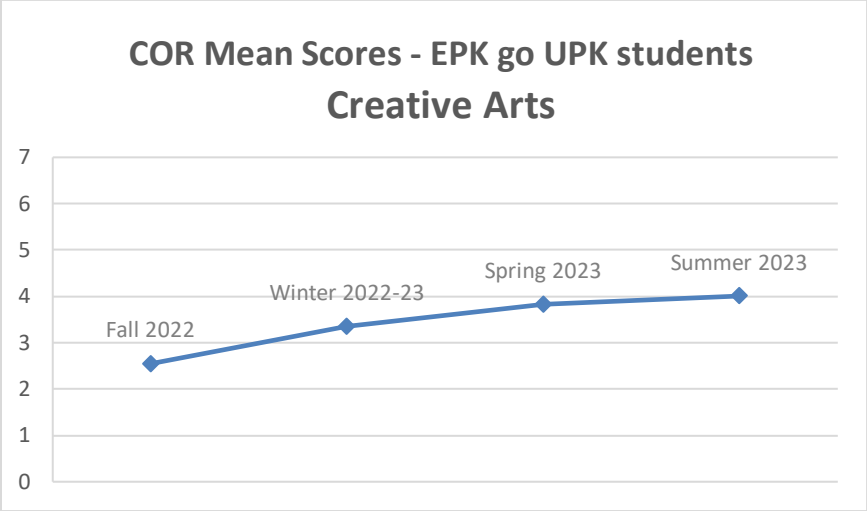


Figure 7G. COR Science/Technology: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

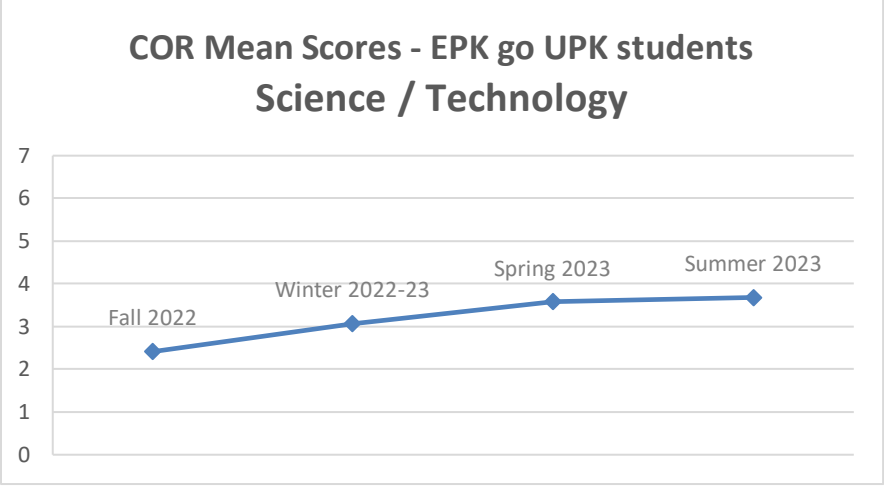


Figure 8H. COR Social Studies: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students

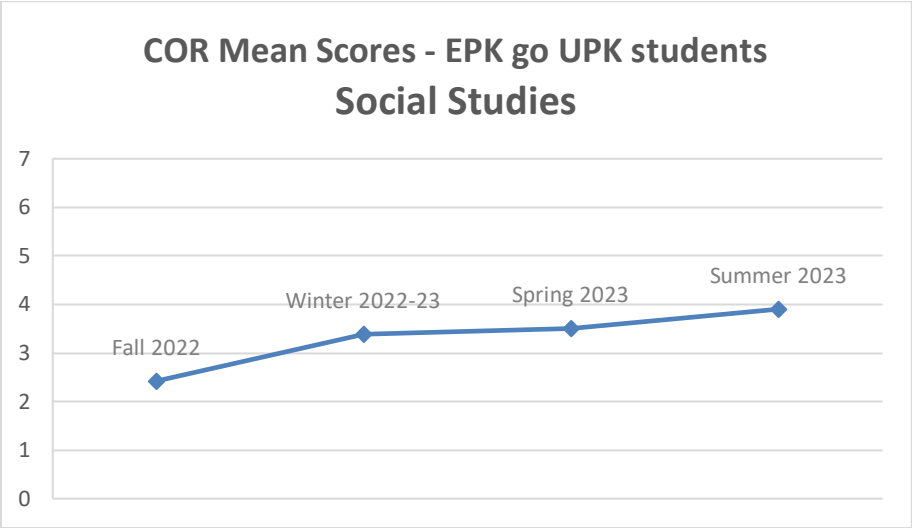
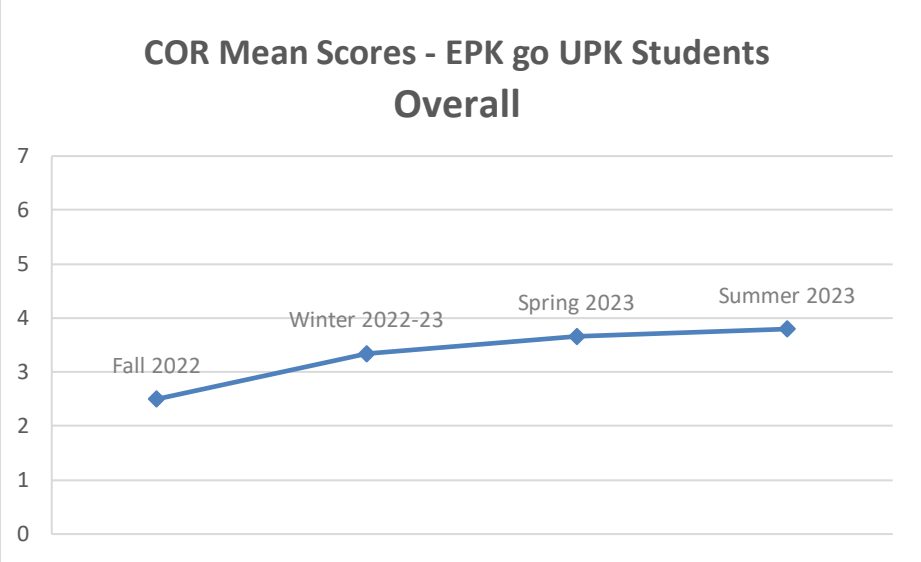


Figure 9I. COR Overall Scores: mean scores at each assessment for EPK go UPK (3-year-old) SummerLEAP students



Increases in COR scores showed further improvement or were maintained following EPK students' SummerLEAP participation.

Spring to Summer Change – UPK Students

Changes in UPK SummerLEAP students' spring to summer COR scores are presented in Table 10.

Table 10. COR spring to summer change scores for UPK students

COR Subscale	*N*	*Mean*	*S.D.*	*t*	*p*
Approaches to learning	175	-0.10	1.00	-1.36	*ns*
Social emotional	168	0.06	0.99	0.82	*ns*
Physical development	171	0.01	1.07	0.17	*ns*
Language/literacy	166	0.09	0.88	1.33	*ns*
Mathematics	172	-0.08	0.85	-1.23	*ns*
Creative arts	168	0.01	0.91	0.15	*ns*
Science/technology	168	0.11	1.00	1.40	*ns*
Social studies	170	-0.15	1.20	-1.68	*ns*
Overall	166	0.00	0.84	-0.07	*ns*

Unlike the EPK students, there were no statistically significant changes in COR scores observed for students in the UPK go K (Pre-K) group when single sample t-tests were conducted. Effect sizes for COR scales among those students were small, ranging from -0.13 to 0.11.

Figure 2 presents average scores at each assessment time for the COR subscales separately (Figure 2A through 2I) among UPK go K summerLEAP students.

Figure 10A: Approaches to Learning: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

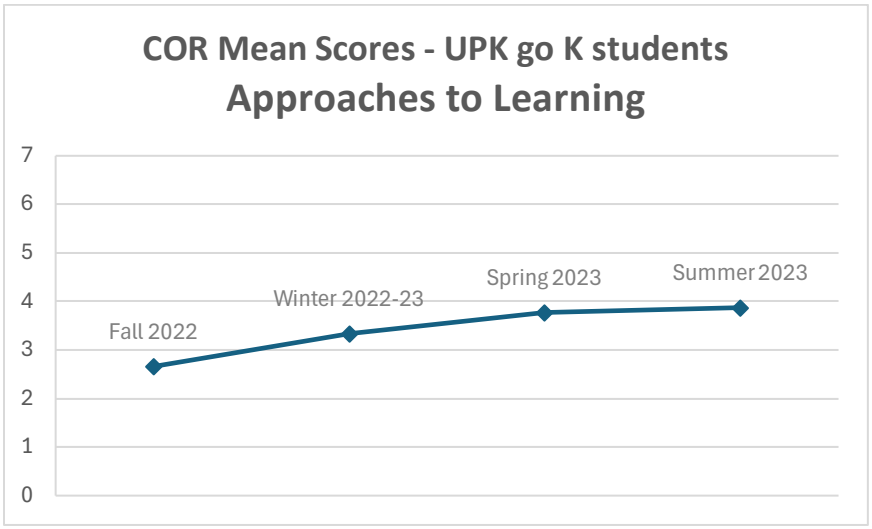


Figure 11B: Social Emotional Development: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

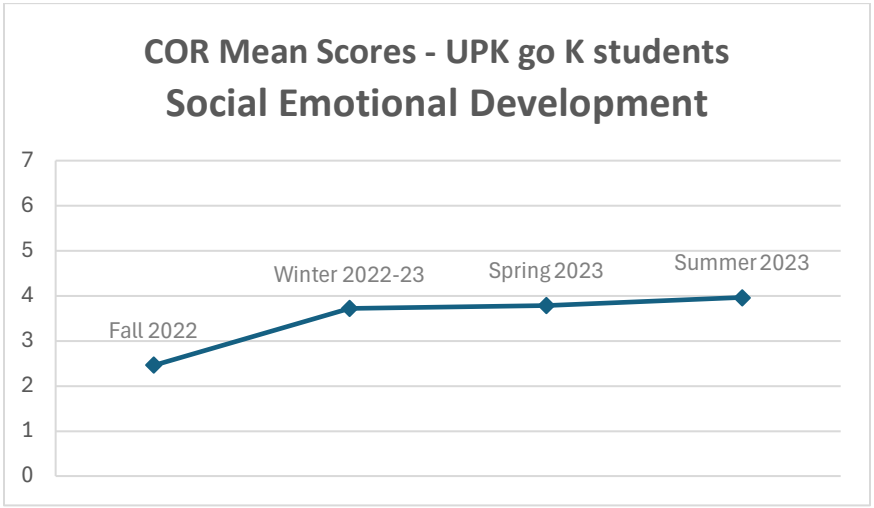


Figure 12C: Physical Development and Health: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

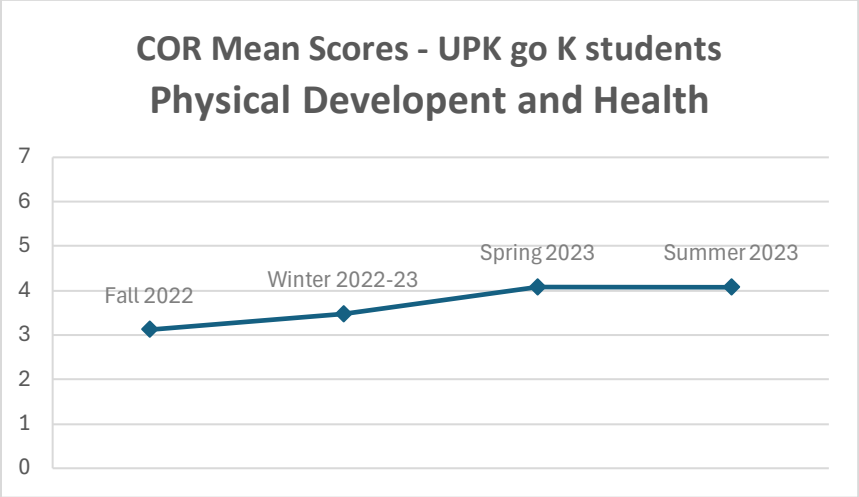


Figure 13D: Language/Literacy: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

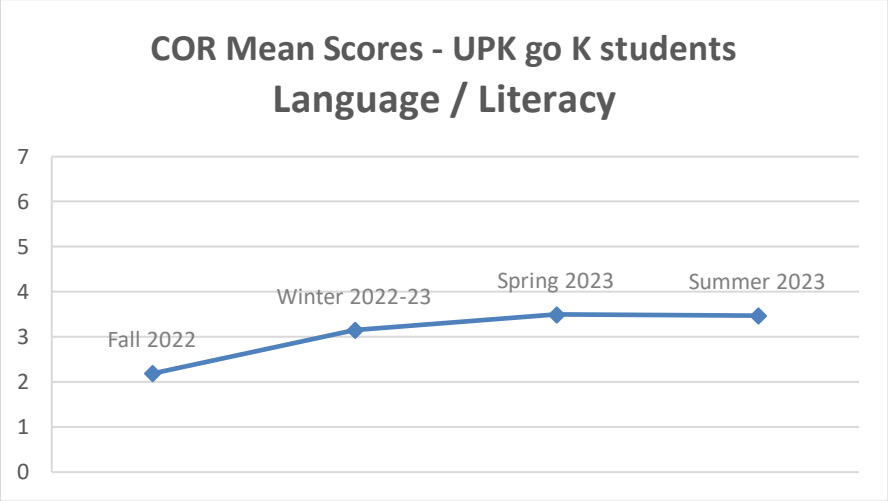


Figure 14E: Mathematics: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

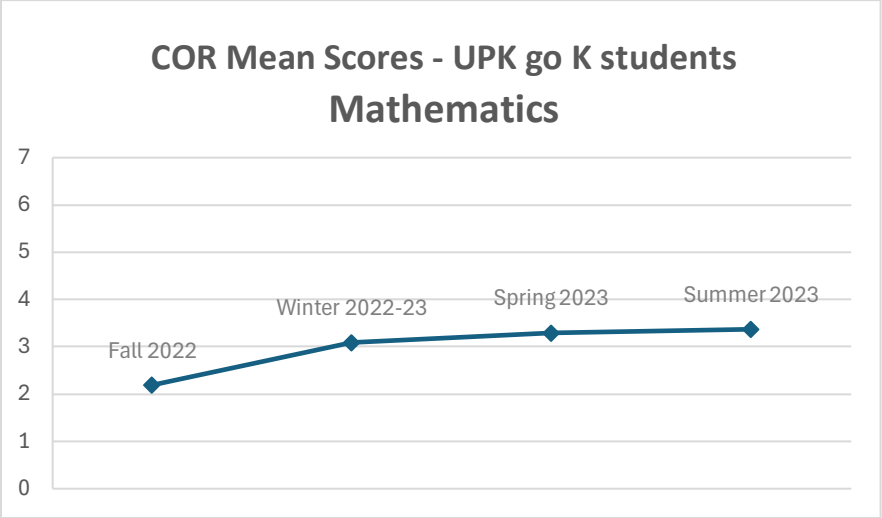


Figure 15F: Creative Arts: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

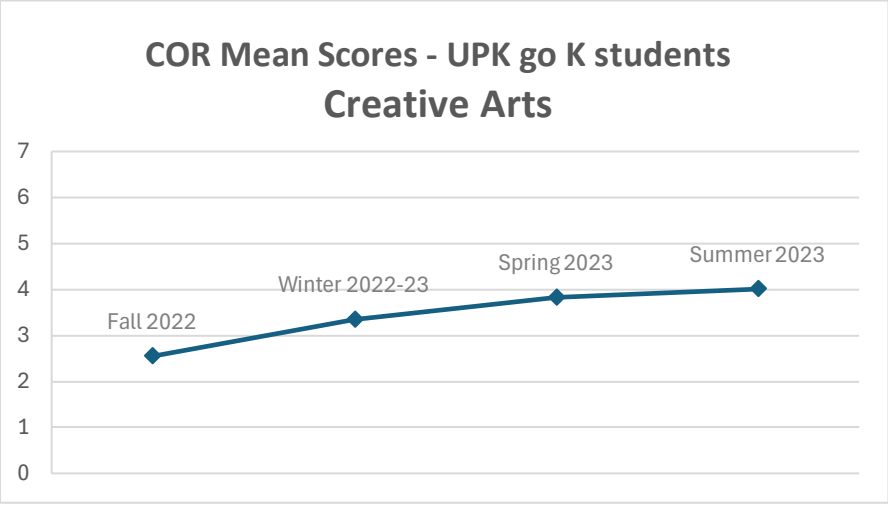


Figure 16G: Science/Technology: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

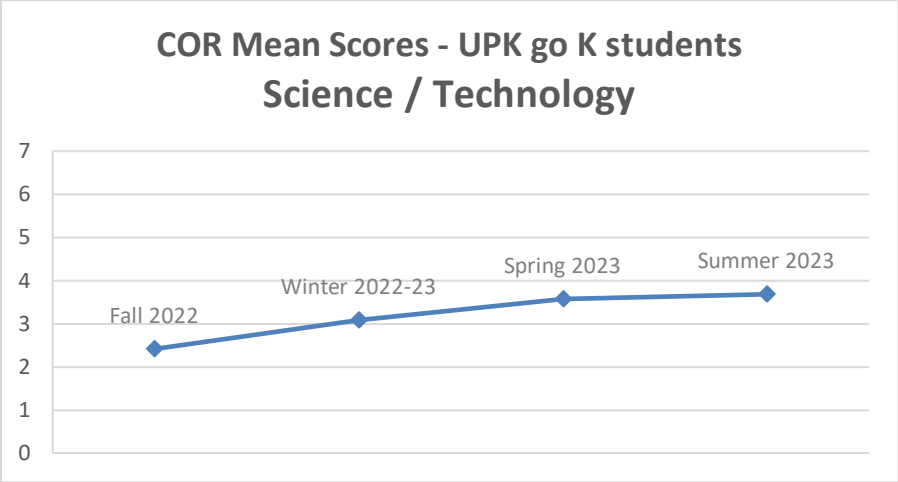


Figure 17H: Social Studies: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students

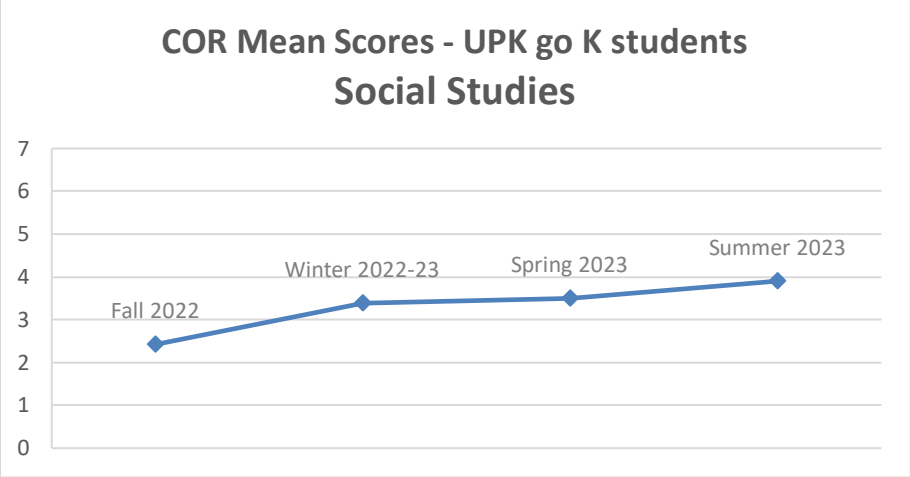
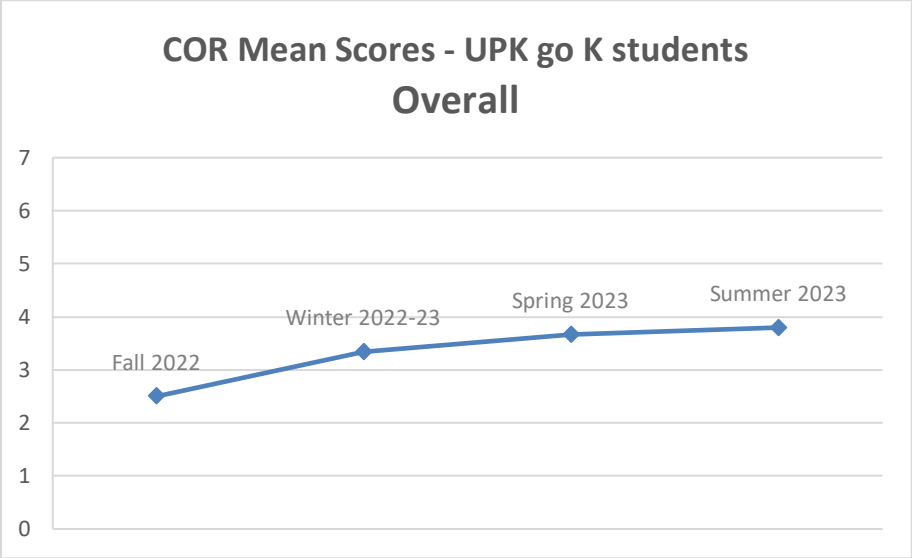


Figure 18I: Overall Scores: COR mean scores at each assessment for UPK go K (Kindergarten) SummerLEAP students



Increases in UPK students' COR scores from fall through spring were maintained following SummerLEAP participation.

T-CRS assessments were not completed by program teachers for SummerLEAP students at the end of the summer program. For this reason, we were unable to conduct analogous analyses to assess change from Spring to Summer following SummerLEAP participation.

Kindergarten Readiness

The criteria for kindergarten readiness established by the HighScope developers requires students to receive a minimum score of 3.75 for each subscale and an overall score of 4.0 or greater (HighScope, 2014).

Kindergarten readiness, denoted as "not ready" or "ready", is evaluated at several points during the school year using the COR Advantage. In Table 9 we see the proportion of UPK students deemed "ready", increasing from 2% at the time of fall assessments to over 50% following SummerLEAP participation.

Table 11. Kindergarten readiness status among UPK (Pre-K) students with measures at all four assessments.

	Fall 2022		Winter 2022-23		Spring 2023		Summer 2023	
	Count	%	Count	%	Count	%	Count	%
Not ready	118	99%	101	85%	52	44%	50	42%
Ready	1	1%	18	15%	67	56%	69	58%

Children's kindergarten readiness status, based on COR assessments, did not show statistically significant change between spring (56%) and summer (58%).

SUMMARY AND CONCLUSIONS

The findings support our hypothesis that students who participate in the SummerLEAP program will not experience summer learning loss. As we have seen, both the EPK and UPK students who took part in this program showed no decline in their scores on the COR Advantage or the T-CRS. Rather, we observed some increases in scores for several domains from spring to end-of-summer assessments.

While we do not have a comparison group with end-of-summer scores, it would be expected that students who are not participants in SummerLEAP would demonstrate learning losses similar to those seen in prior studies.

Scores from the T-CRS assessments further support our hypotheses in that the SummerLEAP students were not found to have decreases in school adjustment measures. Here again, the SummerLEAP participants maintained or increased their indicators of healthy school adjustment in the areas of Task Orientation, Behavior Control, Assertiveness, and Peer Socialization.

Our third hypothesis was the successful preparation of SummerLEAP students prior to entering kindergarten. This is most relevant for the UPK go kindergarten students and was supported by the COR kindergarten readiness findings. Students participating in SummerLEAP continued to demonstrate growth in kindergarten readiness.

Overall, there were some demographic differences between the eventual SummerLEAP students and their comparison counterparts. For example, the proportion of males in the EPK SummerLEAP group was disproportionately lower than the comparison group. Among the UPK students, there was a statistically significantly higher proportion of white students in the eventual

SummerLEAP group than in the comparison group. More significantly, there were baseline (fall) differences in scores between the EPK SummerLEAP and non-SummerLEAP comparison students on most of the COR scales, with the eventual SummerLEAP students starting the school year with scores indicative of higher skills. This was not in evidence for the UPK students, for whom there were no baseline COR score differences.

Extended Pre-Kindergarten (EPK) students

Comparing the (eventual) EPK go UPK students with all Rochester City School District EPK students who were not GRSLA summer program participants, there were several differences in the demographic compositions. The summer learning program had a significantly higher proportion of girls (72%) than the general population of RCSD students (49%).

Baseline (fall) COR scores were higher for students who would later become summer program participants on five of the eight subscales and total scores. By spring, statistically significant differences in EPK students' COR scores were seen for all eight subscales and the total score, with the students who would participate in the summer learning program scoring higher. Students in the eventual summer program group also showed greater increases from fall to spring on three of the COR subscales (Social Emotional, Language/Literacy, and Mathematics). There were no differences between the summer program EPK students and the comparison group on the T-CRS subscales in the fall, however at the spring assessment, eventual summer program students had higher scores on Assertiveness and Peer Social subscales than the RCSD students who did not participate in the summer program. Fall to spring changes in T-CRS scores were different between the two EPK groups on the Peer Social subscale, with the RCSD comparison group showing greater change than the eventual summer program participants.

Similar to findings reported for prior evaluations of the SummerLEAP program, we suggest that selection bias is playing a role during recruitment, with students who score higher at baseline being more likely to later participate in the summer program. One hypothesis is that the parent/caregivers of these students having greater support and resources which predispose them to enrolling their children in enrichment programs. Conversely, parent/caregivers with fewer resources may find it more difficult to enroll their children in programs such as SummerLEAP. It may be beneficial to review the recruitment process to ascertain if there are predisposing characteristics or barriers to enrollment that could be addressed.

Changes in EPK students' COR scores from Spring to Summer were statistically significant for two of the subscales, Creative Arts and Social Studies, as well as for the Overall score. The

effect sized of these gains were moderate to large. Due to a lack of summer T-CRS assessment, comparable change score analyses were not possible.

Universal Pre-Kindergarten (UPK) students

Unlike the EPK students, UPK students in the summer program group were not disproportionately female than the students in the comparison group. There were, however, differences in the racial compositions of the two groups. The eventual SummerLEAP group had a lower proportion of White students compared with the non-SummerLEAP group of students (12% versus 22% respectively).

There were no differences observed between the eventual summer program participants and the comparison group for COR scores at baseline (fall) or spring assessment. Likewise, there were no differences in their changes in scores from fall to spring. There were differences noted between the groups for their fall Assertiveness and Peer Social scores from T-CRS assessment, with the students who would become summer program participants having statistically significantly higher scores for both subscales. These differences were seen again at the spring assessment, with the eventual summer program participants once again having higher scores for Assertiveness and Peer Social. The only difference observed between the groups on their fall to spring change scores was for Task Orientation, with the summer program students showing greater change than the comparison group students. This pattern of differences is less suggestive of selection bias.

There were no statistically significant changes seen in COR scores among the UPK students. As with the EPK students, there were no summer T-CRS assessments for spring to summer change analyses.

Readiness for kindergarten is an important outcome variable. While the proportion of Pre-K children deemed kindergarten ready increased from fall to spring, there were no additional increases observed for spring to summer readiness.

Limitations

Students who participate in the SummerLEAP program are not randomly selected. Rather, recruitment for this program occurs at a subset of early care and education sites within the Rochester City School District. There may be predisposing factors that further bias the sample of summer program participants to include those who are higher performing than their peers. The comparison group did not have summer assessment scores, thereby preventing comparisons in spring to summer changes between the two groups. Students in the summer program did not mirror the demographic composition of the general RCSD student population. Finally, the outcome measures used to compare the groups and to measure pre/post change were based upon a single source.

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