The Effects of Learning Genie's AI-Infused Curriculum on Elementary School-Aged Learners

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Contents

EXECUTIVE SUMMARY 3

INTRODUCTION 4

Overview of Learning Genie 4

Overview of the Evaluation 5

METHOD 6

Research Design 6

Participants 6

Measures 8

Analytical Approach 9

RESULTS 10

DRDP Growth by Domain 11

Academic Domains 11

Social, Emotional, and Physical Domain Analyses 11

Growth for Learners in Need of Additional Support 13

Implementation Practices 14

Perceived Impacts 16

Educator Attitudes 17

DISCUSSION 20

Learning Genie Impacts on DRDP Scores 21

Educators' Perceived Impacts and Attitudes 21

Conclusion 21

APPENDIX A: Descriptive DRDP Analyses 23

Appendix B: Single-Level DRDP Regression Analyses 24

APPENDIX C: Full Subgroup Regression Analyses 25

EXECUTIVE SUMMARY

In this mixed-methods quasi-experimental design (QED) study, we examined the impacts of Learning Genie on pre-K and kindergarten achievement and readiness, in schools across Lindsay Unified School District. This report primarily focuses on the impacts of the lesson planning tool on DRDP domain scale scores, and qualitative measures describe teachers' implementation practices, perceived impacts, and attitudes towards the use of Learning Genie in their classrooms.

- The present study was situated in Lindsay (CA) Unified School District. The analytic sample consisted of 408 pre-K and kindergarten students across six elementary schools and pre-K sites.
- The study used a classroom-level QED design, with students in Learning Genie classrooms defined as the treatment group. A weighted comparison group consisting of students from non-Learning Genie classrooms in Lindsay USD was used as the comparison group. Students were weighted at the individual level on the basis of prior achievement and demographic variables.
- Quantitative data sources included Desired Results Developmental Profile (DRDP) domain scores across the following domains: Language & Literacy Development (LLD), Cognition (MATH), Social and Emotional Development (SED), Approaches to Learning – Self Regulation (ATLREG), and Physical Development (PD). In addition, rostering and demographic data including gender, race/ethnicity, ELL status, IEP status, and economically disadvantaged status were provided to CRRE.
- Attitudinally, Learning Genie teachers were highly supportive of the lesson planning tool and its usefulness, citing its efficiency for student evaluation and noting its perceived impacts on learners in terms of their engagement and achievement.
- In exploring outcomes on student achievement, an expected longer-term program impact, however, we obtained outcomes mostly nonsignificant and inconsistent findings in both the overall sample and subgroup analyses.
- Results from single-level analyses did show significant positive impacts of Learning Genie on Language & Literacy Development, Math, and Social and Emotional Development, though this also yielded directionally negative, statistically nonsignificant program impacts on self-regulation and physical development.
- Impacts for IEP students were generally directionally negative, though a significant positive impact was found for IEP treatment students on DRDP math scores.

INTRODUCTION

Overview of Learning Genie

Learning Genie utilizes Artificial Intelligence (AI) to support alignment with educational standards by allowing content to be tailored to specific learning goals and to adjust responsively based on student performance. The platform enables preschool and Universal Transitional Kindergarten (UTK) educators to share developmentally appropriate lessons and activities—whether newly created or adapted from existing materials or curricula. Every resource is pre-aligned with the California Preschool Learning Foundations (CPLF) and the Common Core State Standards (CCSS). Learning Genie follows a built-in cycle of inquiry—"observe, reflect, plan, implement"—to help teachers deliver more intentional instruction that differentiates learning experiences for each child. The tool also automatically generates developmental progress reports to help teachers more easily document and organize student evaluation data that adhere to state assessments.

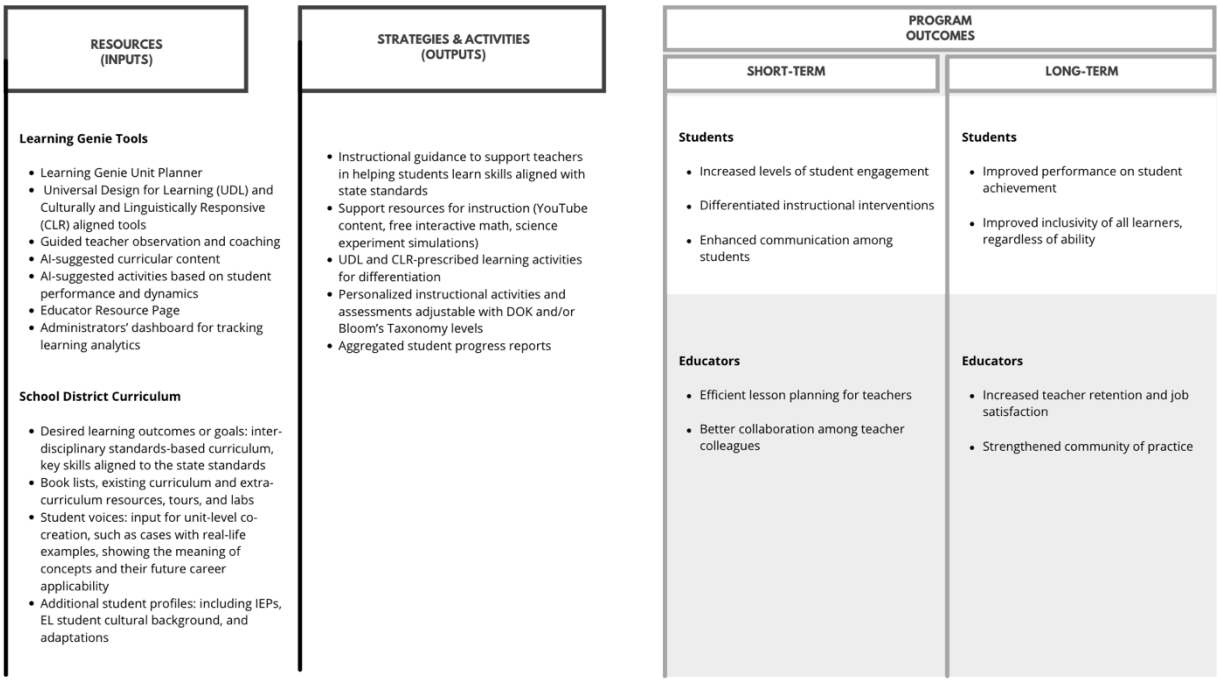
As described by the developers, the Learning Genie lesson planning tool is designed to meet the diverse needs of individual learners by leveraging AI to tailor lessons and activities according to real-time student performance data. This adaptive approach fosters academic success by creating personalized learning pathways that accommodate varying skill levels and abilities. The platform utilizes a multimodal strategy for delivering content, combining text, visuals, and external media to create an engaging and dynamic learning experience. Teachers are presented with text-based materials that have clear, straightforward instructions, explanations, and descriptions to ensure effective communication of key concepts. Visual elements—such as images, diagrams, and infographics—are integrated to reinforce understanding and provide visual context to the text-based content. Additionally, external media resources, including YouTube videos, are embedded to support deeper exploration of complex ideas and offer supplemental resources, allowing learners to engage with the material at their own pace.

The platform integrates with a Local Educational Agency's (LEA) Student Information System (SIS), promoting coordination among UTK programs, California State Preschool Programs (CSPP), Expanded Learning Opportunities (ELO) programs, and inclusive Special Education services. This integration supports collaborative work on a child's developmental portfolios and assessments, making it possible to submit a consolidated child assessment report into the district's data system for thorough data evaluation. Learning Genie fulfills a broad range of needs for pre-K and UTK teachers, school leaders, and families. Its features include tools for portfolio-based assessments that track student engagement and developmental progress, access to diverse play-based curricula, communication platforms, and digital record-keeping—all designed to help reduce the workload for educators while providing quality instruction and simplifying student assessment.

Learning Genie was designed using a comprehensive Logic Model (see Figure 1) that

clearly articulates programmatic inputs (resources), outputs (strategies and activities), and their associated outcomes (short-term and long-term) that align with the program framework.

Figure 1
Learning Genie Logic Model



Overview of the Evaluation

The present study employed a quasi-experimental design (QED) to examine the following research questions:

1. Do Learning Genie students have a positive developmental growth change as a result of their teachers using the curricular tool?

    a) Do Learning Genie students exhibit positive growth in specific domains, such as Self-Regulation (ATLREG), Social-Emotional Development (SED), Language and Literacy Development (LLD), Cognition (MATH) and/or Physical Development (PD)?

2. Does the Learning Genie curricular tool provide more individualized growth for learners from underserved populations (IEPs and ELLs) in need of additional support?
3. What are the factors that help or hinder implementation of the Learning Genie

curricular tool?
4. What are the perceived impacts of Learning Genie, according to educators?
5. What are educators' attitudes towards the use of Learning Genie?

METHOD

Research Design

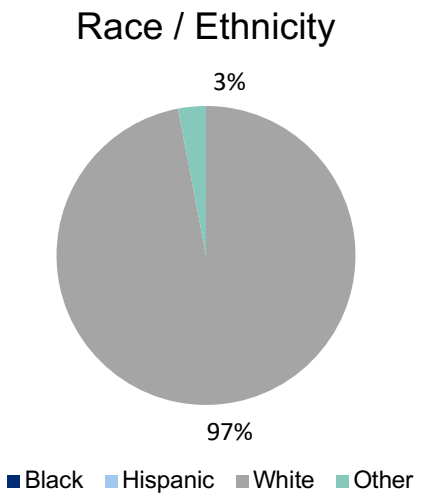
This study examined program impacts of Learning Genie's AI-assisted lesson planning tool by conducting a mixed methods quasi-experimental design (QED) study of kindergarten students in Lindsay Unified School District (USD) in the 2024-25 school year. Outcome measures for this study included Desired Results Developmental Profile (DRDP) domain scale scores. DRDP domain score gains from fall 2024 to spring 2025 were compared between treatment students whose teachers used the AI-assisted lesson planning tool and comparison students whose teachers engaged in business-as-usual instruction. Hierarchical linear modeling (HLM) with students nested in teachers was used to conduct the main impact analyses.

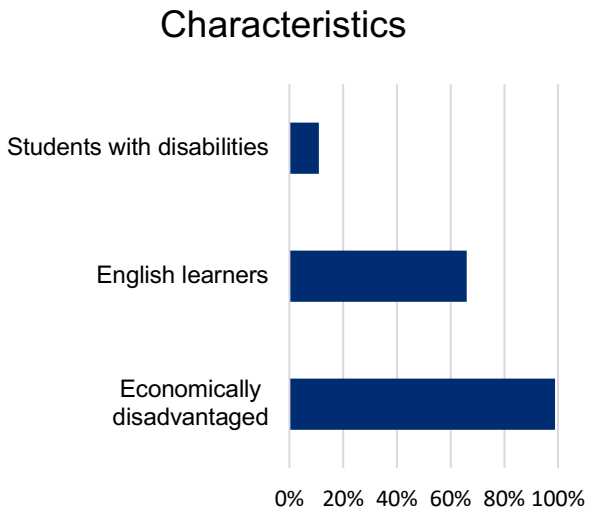
In addition to the QED, a separate qualitative measure was designed and employed to educators in Lindsay USD in fall 2024. This 14-item online survey included closed- and open-ended questions that collected insights into how Learning Genie is implemented in Lindsay USD, as well as educators' perceived impacts and attitudes towards its use in the classroom. The survey was administered by researchers in the Center for Research and Reform in Education (CRRE) to 64 valid email addresses for educators in Lindsay USD who have experience using the lesson planning tool in their elementary grades' classrooms; of those who were invited to participate, 20 educators completed the survey.

Participants

The study took place in a small-town, rural district in California. Lindsay USD serves approximately 4,000 students across 11 schools. District-wide, the student population is majority Hispanic (86%), with most of the other students being White (13%) or Asian (1%). The current student sample was attended across Lindsay USD's six elementary schools that contain a pre-K and/or kindergarten program.

Further details about study participants are represented below.





Across the entire sample, nearly all students were White (97%) and Hispanic (95%). It is important to note that these categories are measured separately, so a student could be classified as both White (race) and Hispanic (ethnicity). Nearly the entire sample was economically disadvantaged, while nearly two-thirds of the sample were ELLs and 10% of the sample were students with IEPs. Demographics of the analytic sample are presented in Table 1 for the treatment (T) and comparison (C) samples. As noted, the ELL percentage was significantly higher in the C group (75.32% vs. 38.94%), whereas the T group contained a higher percentage of females (5% vs. 40%). Due to these discrepancies, as well as prior achievement differences to be described later, we employed propensity-score weighting to create a sample of equivalent C students from the overall pool of comparison students.

Table 1
Demographics of Analytic Sample

	Treatment %	Weighted Comparison %	All Comparison %
Female	50.00*	39.85	41.56
White	92.92	98.43	98.38
Hispanic	95.54	98.43	94.81
Other Race/Ethnicity	7.08	1.57	1.62
SPED	7.08	10.76	12.01
ELL	38.94	44.27	75.32*
FARMS	100.00	99.35	99.35
N	112	296	296

Note. * $p < .05$.

To capture qualitative data on the implementation, perceived impacts, and attitudes towards the use of Learning Genie, a total of 20 voluntary participants completed the online survey, via Qualtrics, regarding their (a) background and demographics; (b) experiences with implementing Learning Genie; (c) perceptions regarding the program's

impacts; and (d) attitudes towards the program. The survey sample of educators was majority White (*n* = 15) and all female (*n* = 20). Participants also were similar in terms of their professional backgrounds; 70% of respondents (*n* = 14) held a master's level degree, and three-quarters (*n* = 15) had a minimum of 16 years' teaching experience. Responses to close- and open-ended questions were analyzed for emerging themes, and the results are presented thematically in this report.

Measures

In order to address the research questions, the study team gathered and analyzed data from multiple sources, which are summarized in Table 2.

Table 2
Research Questions With Corresponding Measures

Research Questions	DRDP Assessment	Teacher Survey
Do Learning Genie students have a positive developmental growth change as a result of their teachers using the curricular tool?	✓	
Do Learning Genie students exhibit positive growth in specific domains, such as Self-Regulation (ATLREG), Social-Emotional Development (SED), Language and Literacy Development (LLD), Cognition (MATH), and/or Physical Development (PD)?	✓	
Does the Learning Genie curricular tool provide more individualized growth for learners with IEPs in need of additional support?	✓	
What are the factors that help or hinder implementation of the Learning Genie curricular tool?		✓
What are the perceived impacts of Learning Genie, according to educators?		✓
What are educators' attitudes towards the use of Learning Genie?		✓

Data sources and measures for the current study included domain scaled scores from the Desired Results Developmental Profile (DRDP) assessment, as well as rostering data for district students who were included in the current evaluation.

Desired Results Developmental Profile (DRDP; 2015). The DRDP is a formative assessment developed by the California Department of Education to evaluate young children from early infancy to kindergarten entry. Scores from the DRDP are used to inform instructional decisions and programming development for young children. The DRDP consists of eight domains: (1) Approaches to Learning – Self Regulation (ATL – REG), (2) Social and Emotional Development (SED), (3) Language & Literacy Development (LLD), (4) English-Language Development (ELD), (5) Cognition, Including Math and Science (COG), (6) Physical Development – Health (PD), (7) History-Social Science (HSS), and (8) Visual and Performing Arts (VPA). Teachers and/or caregivers

complete the DRDP by observing a child's behavior and completing a number of items corresponding to each of the eight DRDP domains. Students were assessed twice in the 2024-25 school year; once in the fall (within 60 days of enrollment) and again in the spring, at least six months after the initial DRDP administration. Domain scaled scores, which are normalized and computed based on an Item Response Theory (IRT) model, were used for the impact analyses in this evaluation.

Student rostering data. Student rostering data were also included in the dataset provided to CRRE by Learning Genie. Rostering data included unique student IDs, as well as student school, teacher, and classroom section identifier. A treatment variable was constructed using the teacher variable, as six teachers elected to use the Learning Genie AI lesson planning tool in their classrooms, while the 12 remaining teachers elected to continue their usual teaching practices.

Teacher survey. Researchers in the CRRE developed an online survey on the Qualtrics platform that was administered to 20 teacher participants between the months of July and August 2024. The 14-item survey used mostly Likert-type and several open-ended items that were designed to measure how teachers used the planning tool, as well as their perceptions and attitudes regarding its use.

Analytical Approach

Data for pre-K and kindergarten students in Lindsay USD were analyzed descriptively by examining patterns in DRDP domain scores. Hierarchical Linear Modeling (HLM) with students nested within teachers was used to determine impacts of Learning Genie on DRDP domain scores. Demographic variables such as gender, race/ethnicity, ELL status, IEP status, and economically disadvantaged status were included in all models. All covariates in HLM models were grand-mean centered to enable interpretation of the intercept.

Unadjusted baseline achievement differences as measured by fall 2024 DRDP domain scores ranged from .32 to .46 SDs, with treatment students significantly outscoring comparison students on all measures. To adjust for these prior achievement and demographic differences (namely, ELL percentages), propensity-score weighting (PSW) was used to create a comparison group of students that was as similar as possible to treatment students. Within the sample, treatment students were each given a weight of 1, while comparison students were each given a weight of:

$$Weight_i = \frac{Probability_i}{1 - Probability_i}$$

Here, the *Probability* variable represents the likelihood that a comparison student would be in the treatment group, given the student's prior achievement and demographics. Thus, students who are more similar to treatment students would have higher probabilities, while students less similar to treatment students would have lower

probabilities. Students with weights of greater than 10 were dropped from analyses, as weights of these magnitudes are indicative of individual students who would have an outsized influence on analytic results.

The result of this PSW procedure was that comparison students who were more similar to treatment students in prior achievement and ELL status were weighted more heavily in analyses and vice versa. This approach resulted in a contrast of a weighted comparison group that was as similar as possible to the observed group of treatment students. After these weights were applied to comparison students, baseline equivalence was achieved across all DRDP domain scores, with standardized mean differences of less than .10 SDs. Adjusted baseline equivalence tables can be found in Table 3.

Table 3

Baseline Equivalence, Achievement Outcomes on DRDP Subjects

Analytic Sample	All students	Treatment			Comparison			Standardized Mean Difference
	N	*n*	*M*	*SD*	*n*	*M*	*SD*	*M*
ATLREG	406	110	493.77	50.00	296	498.66	54.09	-.09
SED	406	110	484.78	67.60	296	484.52	54.79	.00
LLD	406	110	482.59	59.58	296	478.08	53.41	.08
MATH	406	110	484.86	47.38	296	487.20	55.41	-.04
PD	406	110	493.96	48.44	296	492.50	66.57	.02

Note. Domain acronyms are as follows: (1) Approaches to Learning – Self Regulation (ATL – REG), (2) Social and Emotional Development (SED), (3) Language & Literacy Development (LLD), (4) Cognition (MATH), and (5) Physical Development (PD)

The main impact analyses consisted of HLMs that employed the sampling weights derived from the PSW procedure described above. The five DRDP domains were selected on the basis of non-missing data; these domains were the only domains for which we had a majority of observations containing non-missing fall and spring scores. After deleting observations that did not have complete fall and spring test data and demographic data, the final analytic sample consisted of 366 students across 18 teachers.

RESULTS

This section of the report begins with findings related to program impacts on DRDP domain scores. We then present results for student subgroups of interest, namely ELLs and students with IEPs. Note that unadjusted descriptive analyses of DRDP scores can be found in Appendix A. We also include the results of single-level (unclustered) regression analyses on the same outcomes in Appendix B and results of full subgroup regression analyses in Appendix C. Last, descriptive measures of educators' implementation practices and perceived impacts and attitudes towards Learning Genie are presented.

DRDP Growth by Domain

Academic Domains

This set of analyses focuses on the impact of Learning Genie on two spring 2025 DRDP academic domains: Language & Literacy Development (LLD) and Cognition (MATH). Both impact analyses were grand-mean centered to enable interpretation of the intercept. The results of both analyses can be found in Table 4.

Table 4
Impact Analysis of Learning Genie on Spring 2025 DRDP MATH and LLD Scores

Variable	Estimate	Standard error	*p* value	Effect Size
DRDP MATH				
Learning Genie	6.607	9.796	.500	.11
Constant	524.469***	4.847	<.001	
Variance of Constant	271.054			
Residual	446.044			
Student *N*	366			
Teacher *N*	17			
DRDP LLD				
Learning Genie	2.792	7.781	.720	.05
Constant	521.460***	6.624	<.001	
Variance of Constant	226.633			
Residual	664.719			
Student *N*	366			
Teacher *N*	17			

Notes. 1. Domain acronyms are as follows: (1) Language & Literacy Development (LLD), and (2) Cognition (MATH). 2. *** $p < .001$.

Learning Genie was shown to have directionally positive, though not statistically significant, impacts on DRDP MATH and LLD domain scores. The regression estimate can be interpreted as the average difference in spring 2025 test scores between treatment and weighted comparison students. Thus, treatment students outscored weighted comparison students by more than 6 points on DRDP MATH scores and nearly 3 points on DRDP LLD scores, controlling for prior achievement and demographic variables (gender, race/ethnicity, IEP status, ELL status, and economically disadvantaged status).

Social, Emotional, and Physical Domain Analyses

The next set of analyses examines Learning Genie impacts on social, emotional, and

physical DRDP domain scores; namely, Social and Emotional Development (SED), Self-Regulation (ATL-REG), and Physical Development (PD). As in the previous analyses, these impact analyses were grand-mean centered to enable interpretation of the intercept. The results of these analyses can be found in Table 5.

Table 5

Impact Analysis of Learning Genie on Spring 2025 DRDP SED, ATL-REG, and PD Scores

Variable	Estimate	Standard error	*p* value	Effect Size
DRDP SED				
Learning Genie	8.876	8.842	.315	.17
Constant	522.881***	7.209	<.001	
Variance of Constant	316.324			
Residual	632.847			
Student *N*	366			
Teacher *N*	17			
DRDP ATL-REG				
Learning Genie	-10.559	9.363	.259	-.20
Constant	537.696***	5.096	<.001	
Variance of Constant	219.783			
Residual	734.758			
Student *N*	366			
Teacher *N*	17			
DRDP PD				
Learning Genie	-14.110	10.676	.186	-.22
Constant	549.659***	8.624	<.001	
Variance of Constant	374.259			
Residual	1340.785			
Student *N*	366			
Teacher *N*	17			

Notes. 1. Domain acronyms are as follows: (1) Social and Emotional Development (SED), (2) Approaches to Learning – Self Regulation (ATL – REG), and (3) Physical Development (PD). 2. *** $p < .001$.

Learning Genie had mixed outcomes on social, emotional, and physical DRDP domain scores, though none reached statistical significance. A directionally positive impact of Learning Genie was observed on SED scores whereas directionally negative impacts were observed on ATL-REG and PD scores.

In addition, another set of single-level (unclustered) regression analyses examined the impact of Learning Genie on DRDP domain scores. These analyses are identical to the main impact analyses found above, with the only difference being the lack of accounting for the clustering of students within teachers (i.e., a single-level model versus a multi-level model). Statistical controls for prior (fall) domain scores and demographic variables are contained in these analyses, similar to the main impact analyses. More

detailed results of these analyses can be found in Appendix B.

The results of single-level (unclustered) analyses showed similar patterns in terms of directionality in relation to the hierarchical analyses in the main report. However, these analyses showed significant positive impacts of Learning Genie on Language & Literacy Development (LLD), Cognition (MATH), and Social and Emotional Development (SED). As in the main impact analyses, the regression estimates can be interpreted as the average difference in spring DRDP domain score between treatment and comparison students, controlling for fall DRDP domain score and demographic variables. Thus, treatment students outperformed comparison students by 7 to 9 points on LLD, MATH, and SED domain scores. Effect sizes of .12 to .15 SDs were evidence on these three domains, which were comparable to the effects sizes shown in the main impact analyses and evidence of medium-sized practical impacts of Learning Genie on these three domain scores. Directionally negative, though statistically nonsignificant program impacts were evidenced on DRDP self-regulation (ATL-REG) and physical development (PD) domain scores. Taken together, the results of these analyses show tentative evidence of the efficacy of Learning Genie on pre-k readiness. Importantly, these analyses should be interpreted cautiously, as these analyses did not control for the clustering of students within teachers, potentially resulting in under-estimating of regression standard errors, which in turn may lead to an increased probability of a Type I error.

Growth for Learners in Need of Additional Support

The next set of analyses examined Learning Genie impacts on student subgroups; namely, underserved (ELL and IEP) students. We report the additive impacts of treatment main effects plus interaction terms (simple effects) for each subgroup, with Wald tests performed on each simple effect. This approach allows us to estimate unique program impacts for each subgroup, as well as to test whether there were differential impacts of Learning Genie across subgroups. Complete regression tables containing interaction terms related to subgroup analyses can be found in Appendix C. Table 6 shows the results of subgroup analyses (simple effects tests) for IEP and ELL students. Note that the total sample size for the IEP sample is only 45 students; of those 45, only eight were in the treatment group. Thus, analyses were very underpowered, and results should be interpreted cautiously.

Table 6

Subgroup Analysis Results, by Subgroup and DRDP Domain

Subgroup	Estimate	*p* value	*n*
IEP			
MATH	31.704*	.042	45
LLD	-18.886	.213	45
SED	-23.304	.201	45
ATL-REG	-54.756*	.020	45

PD	-14.640	.409	45
ELL			
Math	8.320	.431	276
LLD	11.876	.149	276
SED	10.440	.241	276
ATL-REG	-9.771	.290	276
PD	-25.262*	.025	276

Notes. 1. Domain acronyms are as follows: (1) Cognition (MATH), (2) Language & Literacy Development (LLD), (3) Social and Emotional Development (SED), (4) Approaches to Learning – Self Regulation (ATL – REG), and (5) Physical Development (PD). 2. * $p < .05$.

Significant interactions were observed between treatment and both subgroup indicators on LLD domain scores (see Appendix B), as well as between the treatment and ELL indicator on the PD domain score. Thus, Learning Genie impacts were significantly higher for ELL students on the LLD subtest, in relation to the entire sample. Conversely, Learning Genie impacts were significantly lower for IEP students on the LLD domain score and for ELL students on the PD domain score, in relation to the entire sample. When examining Learning Genie impacts by subgroup, a significant positive impact was found for IEP students on Math scores, with treatment IEP students outscoring comparison IEP students by nearly 32 points. Conversely, a significant negative impact was found for IEP students on the self-regulation domain, with IEP comparison students outscoring IEP treatment students by nearly 55 points. Similarly, ELL comparison students significantly outscored ELL treatment students by 25 points on PD domain scores. Taken together, the results of these analyses show mixed impacts of Learning Genie on DRDP scores for IEP and ELL students, specifically.

The following three sections on implementation practices, perceived impacts, and attitudes are all derived from the findings of the survey.

Implementation Practices

What are the factors that help or hinder the implementation of the Learning Genie curricular tool?

Key Findings

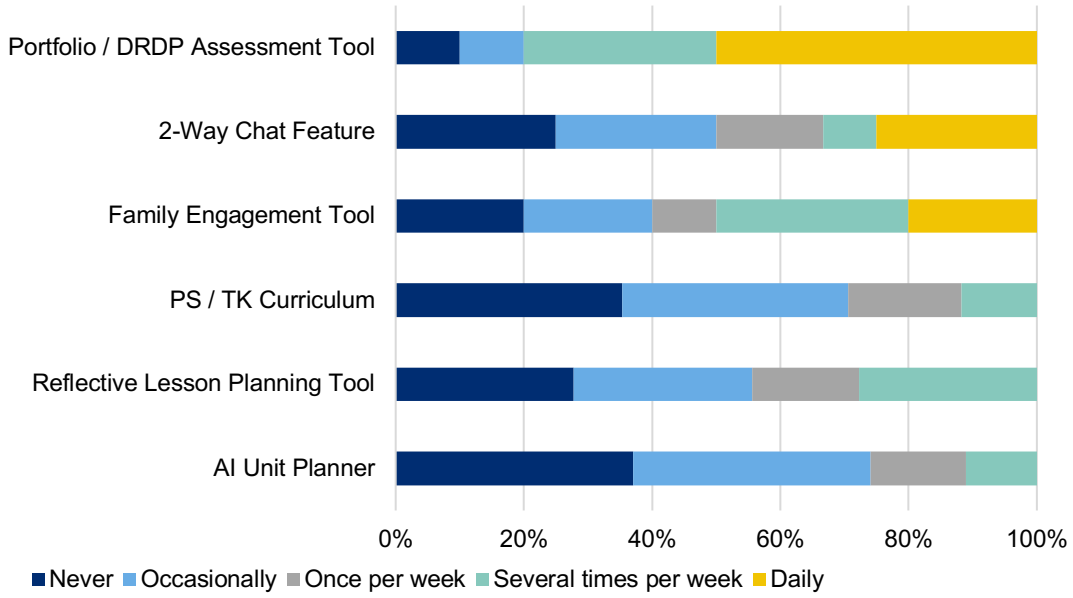
- Generally, educators found the Learning Genie professional development trainings to be beneficial; the live training sessions were preferred over the recorded ones.
- Educators used Learning Genie primarily for learner assessment, communication, and to a lesser extent, family engagement.

Survey respondents (*n* = 20) reported that prior to implementation, Learning Genie educators received professional development training in a variety of formats. Predominantly, users participated in a live, virtual Zoom training (80%), followed by pre-recorded video trainings (*25%*) and live on-site trainings (20%). Two educators indicated that they did not participate in a formal training, but instead, explored the site independently for their own understanding. Overall, educators found the professional development trainings informative and useful; most (80%) agreed that the training and professional development better prepared them to use Learning Genie. Additionally, 70% agreed that they were pleased with the quality of the trainings.

When asked to give specific feedback on the kinds of additional training or support that would have been helpful for implementing Learning Genie, half of the respondents reported having no suggestions. One educator referred to the live demo of the product as being the most useful resource since it "brought the curriculum to life" and "inspired innovative ideas for ECE teachers." Others requested lengthier, more in-depth trainings that included more practice and discussions with peers, leading to a "deeper engagement" with Learning Genie. The recorded, static trainings were appreciated, but the interactive, live training sessions were viewed as being especially effective.

Educators also indicated the frequency with which they used each of the various features in Learning Genie (see Figure 2). For every one of the features, there were some educators who reported having never used them, highlighting the importance of quality professional development that demonstrates how to use Learning Genie in comprehensive ways. The Portfolio/DRDP Assessment Tool was used with the most regularity, with 50% of respondents using it on a daily basis. This seemingly was the primary motivation for using Learning Genie, though other features also were used consistently. The Reflective Planning Tool and AI Unit Planner were used by many educators on a regular weekly basis.

Figure 2
Usage Frequency of Learning Genie Features



Note. n = 20.

The findings suggest that while there are varying usage patterns of these features among educators, the main motivations behind using Learning Genie with consistency is for the purposes of assessment and reflection. With many educators reporting that they have never used some key features of Learning Genie, it is imperative that these supports be discussed more explicitly in the professional development and training sessions moving forward.

Perceived Impacts

What are the perceived impacts of Learning Genie, according to educators?

Key Findings

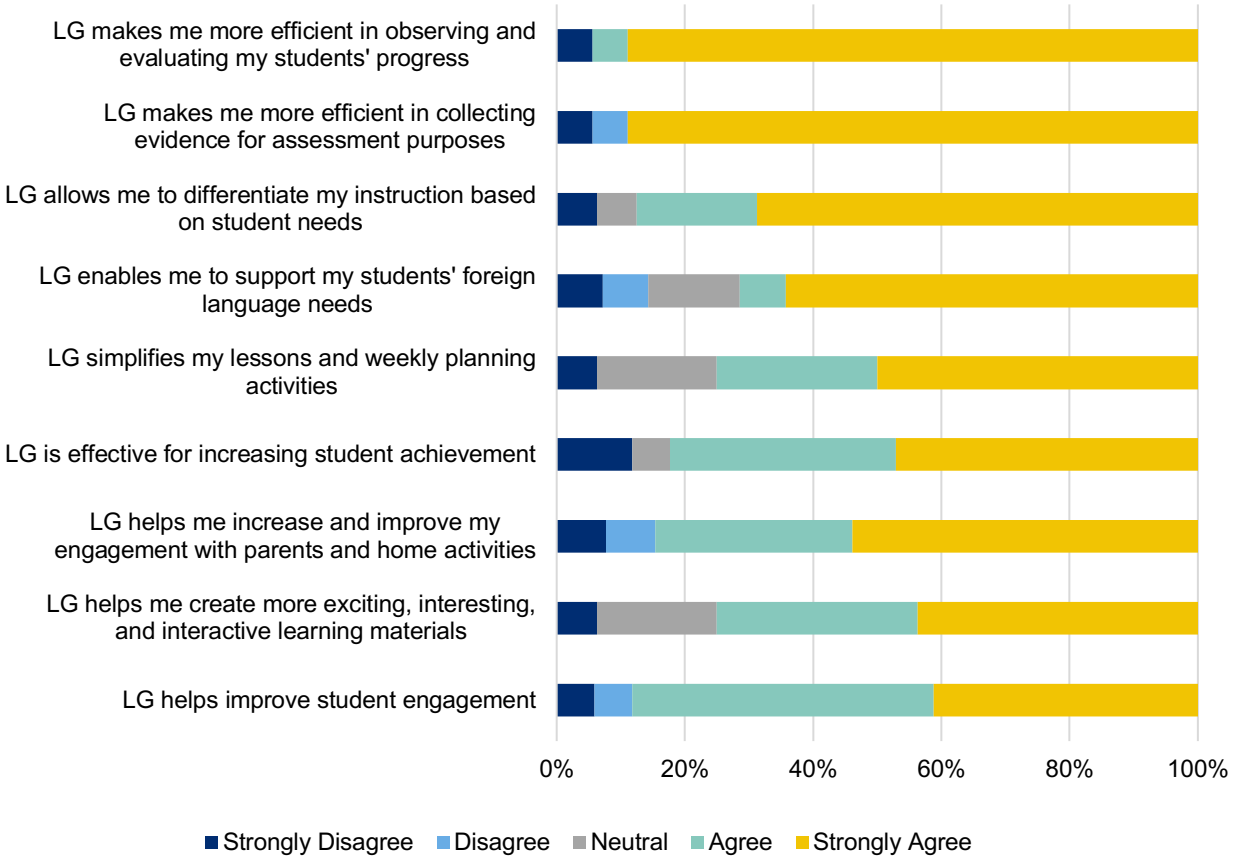
- Teachers perceived Learning Genie to play a direct role in increasing student engagement and achievement.
- Teachers largely agreed that Learning Genie streamlines teaching preparation and collecting and recording data for student assessment and evaluation.

Overwhelmingly, educators had positive attitudes towards the impacts that Learning Genie has on their instructional practices and on students. Figure 3 illustrates the strong

support that educators conveyed. Namely, the two statements with the strongest agreement deal with the efficiency to perform job-related duties; nearly all educators (80%) agreed that Learning Genie helps streamline the collection of assessment evidence and observing and evaluating students. Beyond professional duties, nearly all also agreed that Learning Genie improves student and family engagement, learner differentiation, and ultimately, student achievement.

Figure 3

Educators' Perceptions of Learning Genie Impacts on Students and on Instructional Practices



Note. *n* = 19.

Taken together, the findings on these survey items suggest strong educator beliefs in the benefits of Learning Genie for themselves, students, and parents/guardians. The various features of the program appear to work together to facilitate instruction, and provide individual learner support, which leads to improved levels of engagement and achievement.

Educator Attitudes

What are educators' attitudes towards the use of Learning Genie?

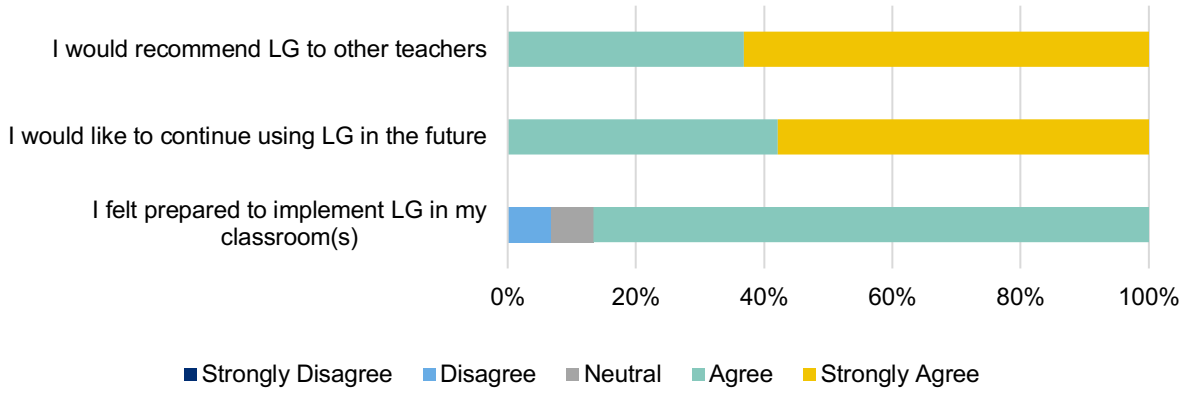
Key Findings

- Educators expressed positive perceptions of Learning Genie and its usefulness.
- Educators found that the Learning Genie planning tool had high usability and accessibility, promoted networking among other teachers, and increased efficiency.

Similar to educators' positive views about the program's perceived impacts, all agreed that they would continue using Learning Genie and would recommend it to other teachers (see Figure 4). When asked if they felt prepared to use Learning Genie, 85% of the respondents agreed.

Figure 4

Educators' Attitudes Towards Learning Genie



Note. *n* = 19.

Educators also were asked to identify what they liked about Learning Genie, and some common themes emerged. These strengths are summarized in Table 7. As shown, the primary themes educators appreciated included Learning Genie's efficiency, usability and accessibility, and training and networking opportunities.

Table 7

Thematic Responses from Open-Ended Survey Questions Regarding Strengths of Learning Genie

Theme	Supporting Quote
Efficiency	"The AI curriculum has tremendous potential to streamline classroom activities, allowing teachers to focus more on personalized instruction and student engagement." "[Learning Genie] allows for streamlined planning and implementation." "LG makes collecting observations a breeze."
High usability and accessibility	"I like the user-friendly set up of LG." "I like that it makes data collection easier for teachers." "I think the unit planner is really easy to use." "The portfolio and assessment tool are very easy to use and meets the need of the DRDP." "The opportunity to have everything accessible across all my devices."
Training and networking	"Some of the live training sessions can be somewhat monotonous and could benefit from being more interactive." "I saw opportunities for improvement with the trainings and the need for more opportunities to engage with a community of educators to share ideas on how they use the Learning Genie curriculum in ways that go beyond just sharing lesson plans."

In addition, educators were asked to provide recommendations for improving Learning Genie. While many articulated suggestions that were highly specific to their individual experiences, Table 8 presents a list of recommendations that apply to the technical design of the Learning Genie platform and additional features that educators would like to have.

Table 8

Thematic Responses from Open-Ended Survey Questions Regarding Recommendations for Improving Learning Genie

Theme	Specific Recommendation
Technical Design	Incorporate more languages for translation. Allow for the option to upload more than four photos for each

	observation. Optimize Learning Genie for use on mobile devices (smartphones and tablets) for easier enrollment and checking in and out of students. In small groups, add the option to leave a comment privately to only one student in the group. Add a brief section to incorporate IEP goals.
Additional Features	Install a chatbot feature for parents/guardians to be able to consult for questions about DRDP scores. Add a Grammarly-like text feature to proofread and revise text-based observations and objectives. Develop an individualized, AI-generated report that explains at-home activity suggestions for parents/guardians. Create a regular blog or podcast that teachers could use to stay current on Learning Genie updates and share ideas with one another in a community of practice. Automate the process whereby observation evidence can be used to assess each learner.

Although educators made some recommendations for improvement, the general sentiment towards Learning Genie was positive. One educator summed up this attitude, saying, "I believe the new Learning Genie features are revolutionary and have the potential to significantly simplify the lives of our teachers."

DISCUSSION

The purpose of the present study was to evaluate the efficacy of Learning Genie in Lindsay USD. Student achievement measures included DRDP domain scale scores. Hierarchical Linear Modeling was used to examine program impacts on all domain scale scores, while subgroup analyses derived from these models were used to examine Learning Genie impacts on IEP and ELL students. Furthermore, descriptive measures including an online attitudinal survey were used to understand educators' experiences with implementing Learning Genie, how they perceive its effects on learners, and their general attitudes towards the lesson planning tool.

Learning Genie Impacts on DRDP Scores

Results of the main impact analyses showed nonsignificant impacts of Learning Genie across the DRDP domain scale scores examined. Three of the impacts were directionally positive, with the most positive findings evidenced on the Social and Emotional Development (SED) domain. Directionally positive findings were also evidenced on Language & Literacy Development (LLD) and Cognition (MATH) domain scores. Directionally negative findings were evidenced on self-regulation (ATL-REG) and physical development (PD) domain scores. However, single-level, unclustered analyses did show significant positive impacts of Learning Genie on Language & Literacy Development (LLD), Cognition (MATH), and Social and Emotional Development (SED). When considering underserved populations, impacts were generally negative for IEP students, although a significant positive impact was found on DRDP Math scores for IEP students. IEP subgroup analysis results should be interpreted cautiously, as the sample size of this group was very small, especially in the treatment group (only eight students). Impacts were mixed for ELL students and generally mirrored the main impact analysis results.

Educators' Perceived Impacts and Attitudes

Based on the results of the survey, teachers overwhelmingly favored the Learning Genie planning tool. Implementation practices were fairly similar for most users, with emerging trends that showed strong emphasis on the regular and sustained use of assessment and communication features. For some educators, there was general agreement that educators were pleased with the quality of the professional development that was provided prior to implementation, and subsequent training opportunities were found to be resourceful, particularly the live interactive training sessions. Educators also perceived Learning Genie to play a role in increasing student engagement and achievement, simplifying weekly planning activities, differentiating content for individual learners, and streamlining student assessment and evaluation procedures.

Conclusion

As an AI-infused lesson planning tool offering guidance, instructional resources, and assessment support, Learning Genie is designed to directly facilitate teachers' efforts to help students learn more effectively and achieve state standards. Its Logic Model, represented in Figure 1, reflects expected short-term outcomes such as improved lesson planning, increased student engagement, personalized and differentiated instruction, and teacher collaboration. The highly positive qualitative findings regarding teacher uses of Learning Genie, especially the DRDP Assessment Tool, the Two-Way Chat Feature, and the Family Engagement Tool, and their perceptions of benefits for them and their students suggest that these outcomes are being successfully achieved in Lindsay USD. The expected long-term benefits of improved student achievement were also explored in this study, with the findings showing mostly inclusive and mixed results. We therefore suggest that additional, longitudinal research be conducted to determine

the degree to which student achievement is impacted as teachers gain more experience at implementing Learning Genie and in more fully utilizing its components beyond the three noted above. We also recommend supplementing the DRDP with more objective measurement. Although a validated pre-K/K assessment with reliable scores, the DRDP is administered by teachers and caregivers, who have obvious personal connections to the students tested and thereby possible biases in how their skills are portrayed. Having an independent tester (e.g., a teacher from a different class or external researcher) administer the DRDP and/or another standardized pre-K/K measure should increase the validity of the impact assessment and potentially the likelihood of more conclusive results.

APPENDIX A: Descriptive DRDP Analyses

Table A1

Average DRDP Domain Scale Scores, by Subject, Unweighted

Group	Pretest	Posttest	Change
ATL-REG			
Treatment (*n* = 107)	495.14	535.39	40.25
Matched Comparison (*n* = 259)	478.48	530.10	52.62
SED			
Treatment (*n* = 107)	487.44	547.72	60.28
Matched Comparison (*n* = 259)	458.21	518.03	49.82
LLD			
Treatment (*n* = 107)	484.64	540.64	56.00
Matched Comparison (*n* = 259)	457.66	509.03	51.37
MATH			
Treatment (*n* = 107)	486.68	542.61	55.93
Matched Comparison (*n* = 259)	467.99	520.33	52.34
PD			
Treatment (*n* = 107)	495.29	544.97	49.68
Matched Comparison (*n* = 259)	476.67	537.80	61.13

Table A2

Average DRDP Domain Scale Scores, by Subject, Weighted

Group	Pretest	Posttest	Change
ATL-REG			
Treatment (*n* = 107)	495.14	535.39	40.25
Matched Comparison (*n* = 259)	501.53	549.50	47.97
SED			
Treatment (*n* = 107)	487.44	547.72	60.28
Matched Comparison (*n* = 259)	486.83	536.38	49.55
LLD			
Treatment (*n* = 107)	484.64	540.64	56.00
Matched Comparison (*n* = 259)	481.86	534.80	52.94
MATH			
Treatment (*n* = 107)	486.68	542.61	55.93
Matched Comparison (*n* = 259)	492.64	543.29	50.65
PD			
Treatment (*n* = 107)	495.29	544.97	49.68
Matched Comparison (*n* = 259)	495.23	560.01	64.78

APPENDIX B: Single-Level DRDP Regression Analyses

Table B1

Impact Analysis of Learning Genie on Spring 2025 DRDP Math and LLD Scores

Variable	Estimate	Standard error	*p* value	Effect Size
DRDP MATH				
Learning Genie	7.276*	3.453	.036	.12
Constant	524.723***	1.767	<.001	
Student *N*	366			
DRDP LLD				
Learning Genie	8.287*	3.696	.026	.12
Constant	515.851***	1.883	<.001	
Student *N*	366			

Notes. 1. Domain acronyms are as follows: (1) Language & Literacy Development (LLD), and (2) Cognition (MATH). *2.* * p < .05; *** *p* < .001.

Table B2

Impact Analysis of Learning Genie on Spring 2025 DRDP SED, ATL-REG, and PD Scores

Variable	Estimate	Standard error	*p* value	Effect Size
DRDP SED				
Learning Genie	8.850*	4.096	.031	.15
Constant	524.126***	2.085	<.001	
Student *N*	366			
DRDP ATL-REG				
Learning Genie	-7.370	3.967	.064	-.13
Constant	533.799***	2.033	<.001	
Student *N*	366			
DRDP PD				
Learning Genie	-6.488	5.089	.203	-.11
Constant	541.790***	2.596	<.001	
Student *N*	366			

Notes. 1. Domain acronyms are as follows: (1) Social and Emotional Development (SED), (2) Approaches to Learning – Self Regulation (ATL – REG), and (3) Physical Development (PD). 2. * p <.05; *** *p* < .001.

APPENDIX C: Full Subgroup Regression Analyses

Table B1

SPED Subgroup Analysis of Learning Genie on DRDP ATL-REG Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	-7.233	9.873	.464
LG*SPED	-47.521	25.437	.062
Constant	537.844***	5.169	<.001
N	366		

Note. *** $p < .001$.

Table B2

ELL Subgroup Analysis of Learning Genie on DRDP ATL-REG Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	-11.209	10.764	.298
LG*ELL	1.438	7.699	.852
Constant	537.561***	5.115	<.001
N	366		

Note. *** $p < .001$.

Table B3

SPED Subgroup Analysis of Learning Genie on DRDP SED Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	11.549	9.172	.208
LG*SPED	-34.853	19.949	.081
Constant	523.283***	7.135	<.001
N	366		

Note. *** $p < .001$.

Table B4

ELL Subgroup Analysis of Learning Genie on DRDP SED Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	7.572	9.435	.422
LG*ELL	2.869	5.030	.568
Constant	522.610***	7.049	<.001
N	366		

Note. *** $p < .001$.

Table B5

SPED Subgroup Analysis of Learning Genie on DRDP LLD Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	4.615	7.641	.546
LG*SPED	-23.501*	11.697	.045
Constant	521.567***	6.716	<.001
N	366		

Note. * $p < .05$; *** $p < .001$.

Table B6

ELL Subgroup Analysis of Learning Genie on DRDP LLD Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	-4.700	8.198	.566
LG*ELL	16.576**	6.248	.008
Constant	519.866***	6.563	<.001
N	366		

Note. ** $p < .01$; *** $p < .001$.

Table B7

SPED Subgroup Analysis of Learning Genie on DRDP MATH Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	4.686	10.088	.642
LG*SPED	27.018	15.660	.084
Constant	524.321***	4.642	<.001
N	366		

Note. *** $p < .001$.

Table B8

ELL Subgroup Analysis of Learning Genie on DRDP MATH Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	5.189	9.874	.599
LG*ELL	3.131	5.634	.578
Constant	524.177***	4.874	<.001
N	366		

Note. *** $p < .001$.

Table B9

SPED Subgroup Analysis of Learning Genie on DRDP PD Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	-14.067	10.538	.182
LG*SPED	-0.573	13.220	.965
Constant	549.660***	8.636	<.001
N	366		

Note. *** $p < .001$.

Table B10

ELL Subgroup Analysis of Learning Genie on DRDP PD Scores

Variable	Estimate	Standard error	*p* value
Learning Genie	-5.156	10.670	.629
LG*ELL	-20.106**	6.219	.001
Constant	551.642***	8.312	<.001
N	366		

Note. **$p < .01$; *** $p < .001$.