East Austin College Preparatory Academy (EAPrep)
Quantitative Date Report and Analysis
School Year 2010-2011

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Executive Summary

Demographic characteristics of EAPrep students (Table 1)

The school is serving its target population. The majority of students are from underserved demographic groups:

- 83% are Hispanic, 13% are African American, and 3-4% are White,
- One-third have limited English proficiency (LEP), and
- Approximately 90% qualify for free and reduced lunch.

Student engagement

As measured by daily attendance (Table 2)

- The average attendance rate based on school records was 97.4% for girls and 98% for boys, which indicates very high level of student engagement with EACPA.
  - Because students of this age likely are not responsible for their own transportation, this also indicates a high level of parental engagement and commitment to the school.

As measured by enjoyment of the digital design process (Tables 3-4, Figure1)

- At the beginning of the school year, 6th grade students report that they know very little about the digital design process, making it too early to measure their enjoyment.
- By the end of the school year, 7th graders' ratings indicate that they know much more about the digital design process.
  - There was wide variation in 7th grade students' reported enjoyment of various aspects of digital design; this variability makes it possible to compare students' level of enjoyment to various academic indicators.
  - A quartile analysis was used to create groups of students with low, average, and high enjoyment of the digital design process.

Growth in digital literacy and feelings of self-efficacy in Globaloria

As measured by understanding of technological terms and activities (Table 5)

- Although the data used here are cross-sectional, there is strong evidence that attending EACPA increases student digital literacy – one of the main goals of the program.
  - At the beginning of 6th grade, students had relatively high levels of familiarity with Google and educational video games, but low familiarity with many other technological terms.
  - The terms least familiar to students at the beginning of 6th grade were actionscript and storyboard; however, by the end of 7th grade students reported "some" to "good" understanding of both of these terms.

As measured by self-efficacy in the Globaloria classroom (Tables 6-7, Figure 1)

- On an 11-item measure of self-efficacy in the Globaloria classroom, 6th grade students showed little change in their ratings over the course of the school year.
  - This may be an indication that the current version of the self-efficacy measure is not sensitive to growth in students who are new to the program.
  - New students may have a difficult time judging their efficacy before they have fully engaged with the Globaloria course content.
  - Specifically, new students may be over-confident at the beginning of the year, which may account for declines in some item averages.

- o There also is some indication that there may be meaningful subcomponents of self-efficacy, which will be examined further, in the next report.

- On average, 7th graders showed increases in their Globaloria self-efficacy from the beginning to the end of the school year.
  - o 7th grade girls showed the largest average gains; these gains were significantly higher than those of 6th grade boys.

- At the beginning of the year, all students gave the highest efficacy item ratings to the "social" aspects of class, for example, their confidence that they could (in rank order)…
  - (1) Get help from the teacher,
  - (2) Get help from another student,
  - (3) Participate in class discussions, and
  - (4) Help other students.

- At the beginning of the year, all students ranked their efficacy in the "technical" aspects of Globaloria the lowest, for example, their confidence that they could (in rank order)…
  - (8) Figure out new things about editing the wiki,
  - (9) Put thoughts and ideas into words that are easy for people to understand on a blog,
  - (10) Figure out what to do when you get stuck on something doing Flash, and
  - (11) Remember information presented in class.

Academic progress in science, technology, engineering, and math (STEM) subjects and other core courses

As measured by class grades (Table 8)

- At the end of the school year, most students passed their STEM classes.
- Among 6th graders,
  - o 96% passed their science course
  - o 94% passed their math course
  - o 99% passed their Globaloria course

- Among 7th graders,
  - o 100% passed their science course,
  - o 99% passed their math course
  - o 93% passed their Globaloria course

Associations between final class grades and state assessment scores (Tables 9a-9d)

- Among boys and girls at both grade levels, there are consistent, moderate correlations between math final course grades and the percentage of items correct on Texas Assessment of Knowledge and Skills (TAKS) math objectives; that is, there is a moderate tendency for students who have higher math course grades to perform better on math TAKS.
- There are fewer consistent significant associations between Globaloria course grades and math TAKS objective level performance; however, 3 of the 4 groups had statistically significant correlations between Globaloria course grades and TAKS objectives 1, 4, and 6.
- Among boys, there were consistent significant associations between the percentage of items correct on the TAKS reading objectives and final course grades in Globaloria and Language Arts.

- Among 7th graders overall, there were consistent, moderate associations between the percentage of items correct on the TAKS reading objectives and final course grades in Language Arts. Among 7th grade girls there was a moderate correlation between Globaloria course grades and TAKS objectives 1 and 4.
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Associations between student academic achievement and enjoyment of the digital design process (Table 10)
- Among 7th grade girls, there is a trend toward a significant association between enjoyment of the digital design process and final course grades in Globaloria. There appears to be a linear association between enjoyment of the digital design process and other course grades among girls, but the sample size may be too small to detect it.
- Among 7th grade boys, enjoyment of the digital design process does not appear to be linearly associated with final core course grades.

Next steps
These findings have led to the development of additional evaluation questions to be explored in the next phase of the project.

- What are the **psychometric properties of the Globaloria self-efficacy measure**?
    - Is there evidence of internal consistency?
    - Is it a broad measure of self-efficacy in the Globaloria classroom or is there evidence of underlying subscales?
    - Can the measure be refined to provide meaningful information about growth in self-efficacy for students at all grade levels?

- **If the self-efficacy is internally consistent, has meaningful subscales**, **or both,** how are the full measure and subscales associated with academic achievement, game quality ratings, engagement, and enjoyment of the digital design process?

- Are there any other associations between **student enjoyment of the digital design process and attendance patterns,** and academic achievement, engagement, and open-ended comments about long-term goals?
    - Is there evidence that program participation and enjoyment of the digital design process are associated with students' STEM educational and career goals?

- Are there significant associations between **game evaluation ratings**, Globaloria self-efficacy, course grades, enjoyment of the digital design process, or student performance on TAKS?
    - Are ratings of game quality associated with Globaloria self-efficacy?
    - Are game quality ratings associated with TAKS objective level performance, particularly the objectives that were the focus of the digital design projects?

- **Are there significant associations among TAKS scale scores** and TAKS objectives among 7th graders?
    - Is the percentage of items correct on Applying Critical Thinking associated with students' Globaloria and other core course grades?

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Program Goals

The mission of East Austin College Preparatory Academy (EACPA), a charter school based in Austin, Texas, is to provide an enriched secondary educational experience for low-income students who would be the first in their family to attend college. The long-term goals of the program are to ensure that students graduate from high school and enroll in college at higher rates than would be expected for students with similar demographic characteristics, and to ensure that EACPA graduates are adequately prepared for success in college and in the modern workplace.

The EACPA curriculum has a particular focus on science, technology, engineering, and math (STEM). One of the unique classes offered at the school is Globaloria, which directly prepares students for college and professional success through the development of digital literacy and technological skills. The Globaloria class meets 60-75 minutes each school day and provides students an opportunity to learn through the collaborative process of developing web-based, educational computer games.

To maximize the chances of meeting these ambitious, long-term goals, the staff and leadership of EACPA engage in an ongoing formative evaluation process both (a) to monitor student progress in key areas and (b) to look for opportunities to enhance its educational programs, particularly Globaloria.

Formative Evaluation Questions

The present report focuses on documenting the achievement and attitudes of students enrolled at EACPA in the 2010-2011 school year, in order to provide a starting point for analysis of Globaloria's impact at the school. The analysis sample comprises 97 sixth-grade students who were in their first year at EACPA, and 93 seventh-grade students, most of whom were in their second year at the school, and second year of participation in Globaloria.

This report is organized around the following evaluation questions:

1. What are the demographic characteristics of EACPA students?
2. Is there evidence of student engagement in EACPA curriculum as measured by daily attendance and student reports of enjoyment of digital design activities?
3. Do students show growth in digital literacy as evidenced by student ratings of their understanding of technological terms and feelings of self-efficacy in the Globaloria classroom?
4. Is there evidence of academic progress in STEM subjects as measured by core course grades and state assessment scores?
5. Are there any noteworthy associations between student academic progress, enjoyment of the digital design process, and technological skills?

What are the demographic characteristics of EAPrep students?

After compiling numerous sources of demographic, survey, and student achievement records, a final analysis file was completed with 190 EACPA Globaloria students, including 97 students in 6th grade and 93 students in 7th grade.

- The large majority are Hispanic (83%) or African American (13%);
- One-third have limited English proficiency (LEP);
- And a large majority (93%) qualifies for free and reduced lunch.

Table 1. Student demographic characteristics

	6th Graders (n = 97)		7th Graders (n = 93)		Full sample (n = 190)		As reported in AEIS* (n = 179)	
	N	Percent	N	Percent	N	Percent	N	Percent
Male	41	45%	51	56%	92	50%	-	-
Female	51	55%	40	44%	91	50%	-	-
Ethnicity								
African American	11	12%	13	15%	24	13%	24	13%
Hispanic	73	81%	75	85%	148	83%	148	83%
White	6	7%	0	0%	6	3%	7	4%
Limited English Proficiency (LEP)	32	33%	36	39%	68	36%	62	35%
Qualified for free and reduced price lunch	88	93%	85	92%	173	93%	160	89%
Both LEP and qualified for free and reduced price lunch	31	32%	35	38%	66	35%	-	-

Is there evidence of student engagement in EAPrep curriculum

As evidenced by daily attendance patterns, all EAPrep students are highly engaged in school.

- The average attendance rate for students as calculated by TEA is 96.6%
- The average attendance rate based on data provided by the program was 97.4% for girls and 98% for boys.
- Both calculation methods show a high level of student engagement, particularly for a disadvantaged student group.
- Student daily attendance is one of the best predictors of student success.
- Middle school student attendance is associated with family support and encouragement;
- It is important to monitor attendance at the individual and group level, because declining attendance is an important leading indicator of drop out.

Table 2. Student enrollment and attendance

Note. These student attendance rates were calculated by dividing the number of days attended by the number of days enrolled.

	6th grade		7th grade		All students	
	Girls (n = 51)	**Boys (n = 41)**	**Girls (n = 39)**	**Boys (n = 51)**	**Girls (n= 90)**	**Boys (n = 92)**
Days enrolled	174	180	175	176	174	178
Days absent	4.6	3.4	4.0	3.8	4.3	3.6
Attendance rate	97.3%	98.0%	97.6%	97.9%	97.4%	98.0%
Minimum Attendance rate	88.3%	88.9%	84.4%	90.0%	84.4%	88.9%
Maximum Attendance rate	100%	100%	100%	100%	100%	100%

Table 3. : Are Globaloria students engaged in their digital design activities?

6th graders – beginning of the year	Overall mean	Girls					Boys				
		Not at all or don't know yet	Not usually true	Sometimes true	Usually true	Very true	Not at all or don't know yet	Not usually true	Sometimes true	Usually true	Very true
I very much enjoy… (scale of 1-5)		**(n =33)**					**(n = 20)**				
Mapping out the plans for a digital design project	1.9	48%	24%	15%	6%	6%	60%	15%	15%	0%	10%
Creating a digital design project with software	1.9	52%	24%	6%	9%	9%	70%	10%	10%	0%	10%
Creating an interactive game from beginning to end	1.6	61%	19%	16%	3%	0%	67%	17%	17%	0%	0%
Computer programming (e.g., Actionscript)	1.7	70%	9%	9%	9%	9%	55%	30%	10%	0%	5%
Project teamwork, working together IN PERSON	2.4	42%	9%	9%	18%	21%	53%	5%	37%	0%	5%
Project teamwork, working together ONLINE	2.0	56%	16%	13%	3%	13%	55%	15%	15%	0%	15%
Posting/publishing files I created to a wiki	1.7	70%	15%	3%	3%	9%	60%	15%	15%	5%	5%

Sixth grade students' reports of enjoyment of various aspects of the digital design process at the beginning of the year.

Table 4. Distribution of average scores from a subset of 7 digital design process enjoyment items.

	Overall mean	25th percentile	Median value	75th percentile	Maximum
Enjoyment quartiles for 6th graders at the beginning of the year	1.9	1.00	1.71	2.33	4.67

- Results indicate that at the beginning of the year, most 6th grade students do not know enough about the digital design process to rate their enjoyment of it.

Is there growth in digital literacy as evidenced by student ratings of their understanding of technological terms?

The table below depicts a cross-sectional analysis of student-reported rating of understanding of technology terms and activities.

Table 5. Mean student ratings of understanding of technological terms and activities

How familiar are you with the following terms and activities? Indicate your level of understanding.	6th grade beginning of the year		7th grade end of the year	
	Girls	Boys	Girls	Boys
Educational internet games	3.0	3.8	3.5	3.0
Multiplayer online role-playing games	2.3	2.9	3.2	3.4
Wikipedia	2.6	2.8	3.5	3.3
Google	4.3	4.3	4.5	4.1
Online tutorial	1.8	2.0	2.5	2.9
Online social network site	2.1	2.6	3.0	3.3
Wiki	2.1	2.1	4.1	3.4
Blog	2.2	2.3	4.1	3.3
MySpace	2.6	3.5	3.7	2.9
Facebook	2.4	2.9	4.2	3.6
Email	2.8	3.2	4.1	3.4
Instant messenger	2.7	2.7	3.6	2.9
Live web conferences (e.g., webex)	1.6	1.8	2.6	2.4
Interactivity	1.6	1.9	3.3	3.1
Post/upload a file	1.9	2.1	3.8	3.4
Photoshop	2.2	1.7	3.5	2.8
Flash software	1.7	1.7	3.5	3.1
Actionscript	1.4	1.5	3.7	2.9
Download	2.3	2.5	3.8	3.0
Graphic design	1.8	1.9	3.4	3.2
Digital project	1.9	1.6	3.2	3.0
Programming	1.8	2.2	3.3	3.0
Animation	2.1	2.5	3.4	3.2
Collaboration	1.6	1.5	3.0	3.0
Software	1.9	1.8	3.1	2.9
Project management	1.6	1.6	3.0	2.7
Prototype	1.7	1.6	2.3	3.0
Storyboard	1.0	1.0	3.0	2.7
Simulation	1.7	1.5	3.0	2.8
Overall Average	**2.1**	**2.3**	**3.4**	**3.1**

Note. Rating values are as follows: none = 1, little = 2, some = 3, good = 4, full = 5.

- These cross sectional data indicate that participating in Globaloria increases student growth in digital literacy from the beginning of 6th grade to the end of 7th grade.
- At the beginning of 6th grade, students had relatively high levels of familiarity with Google and educational video games.

- At the beginning of 6th grade, students were unfamiliar with a large number of terms, most of which 7th graders reported they were much more familiar. This was particularly true for game-related terms like actionscript and storyboard.

## Self-efficacy with Technology Learning and Globaloria

Researchers also began a longitudinal study to document growth in digital literacy as evidenced by changes in student feelings of self-efficacy during the course of the year.

Table 6. Globaloria self-efficacy ratings at 4 time points throughout the year.

	Time 1		Time 2		Time 3		Time 4	
	6th grade		6th grade		6th grade		6th grade	
How confident are you that you can…	F	M	F	M	F	M	F	M
finish assignments on time	75.5	82.8	82	84.2	80.8	83.8	80.4	80.2
always concentrate on school subjects during class	77.7	85.6	84.5	87.5	82.9	87.4	79.2	80.3
remember information presented in class	70.6	73.2	76	81.6	76.2	83.9	78.1	79.4
figure out new things about editing the wiki	75.3	82.4	71.1	84.6	77.8	77.7	78.1	77.6
get help from another student when you get stuck on something	84	86.4	84.4	76.1	81.6	87.8	84.5	81.6
get help from a teacher when you get stuck on something	90	90.1	89.3	87.2	80.7	88.1	81.8	82.1
help other students who are stuck on something	86.3	80.9	78.8	79.6	75.4	84.3	81	77.9
participate in class discussions	86.5	77	78.9	80.8	80.4	85.5	81.9	73.8
put your thoughts and ideas into words that are easy for people to understand on your blog	83.5	72.3	82.1	82.7	79.3	85.7	84	79.7
figure out what to do when you get stuck on something doing Flash	71.4	73.3	78.2	69.5	74.5	81.8	79.1	77
search on the Internet to find help when you get stuck on something	77	81.8	77.2	68.4	77.8	84.1	74.9	87.3
Overall Average	79.8	80.5	80.3	80.6	79.1	83.6	79.8	79.9
	7th		7th		7th		7th	

How confident are you that you can...	grade		grade		grade		grade	
	F	M	F	M	F	M	F	M
finish assignments on time	74.4	73.4	77	76.6	82.8	83.9	87.9	82
always concentrate on school subjects during class	76	79.2	84.4	82.9	84.8	85.2	85.8	86.7
remember information presented in class	70.9	69.8	78	78.4	76.9	78.7	82.1	80.9
figure out new things about editing the wiki	72.8	74.6	82	74.6	83.9	79.4	87.4	80.6
get help from another student when you get stuck on something	76.9	82.8	90.9	85.3	84.4	86.2	89.2	85.3
get help from a teacher when you get stuck on something	78.4	84.2	85.2	86.5	79.9	91.1	91.7	86
help other students who are stuck on something	74.9	71.5	80.4	83	79.6	83.6	85.7	79.3
participate in class discussions	75.4	79.9	82	79.6	81.1	84.1	84.7	85.6
put your thoughts and ideas into words that are easy for people to understand on your blog	72.7	75.8	82.4	80.1	80.6	83	84.8	84
figure out what to do when you get stuck on something doing Flash	61.5	65	81.6	71.5	80.1	82.3	83.8	80.6
search on the Internet to find help when you get stuck on something	74.9	75.7	78	76.5	80.5	88	84.8	84
Overall Average	73.5	75.6	82	78.9	81.3	84.2	86.2	83.2

Figure 1: Self-efficacy by grade level across 2010-11
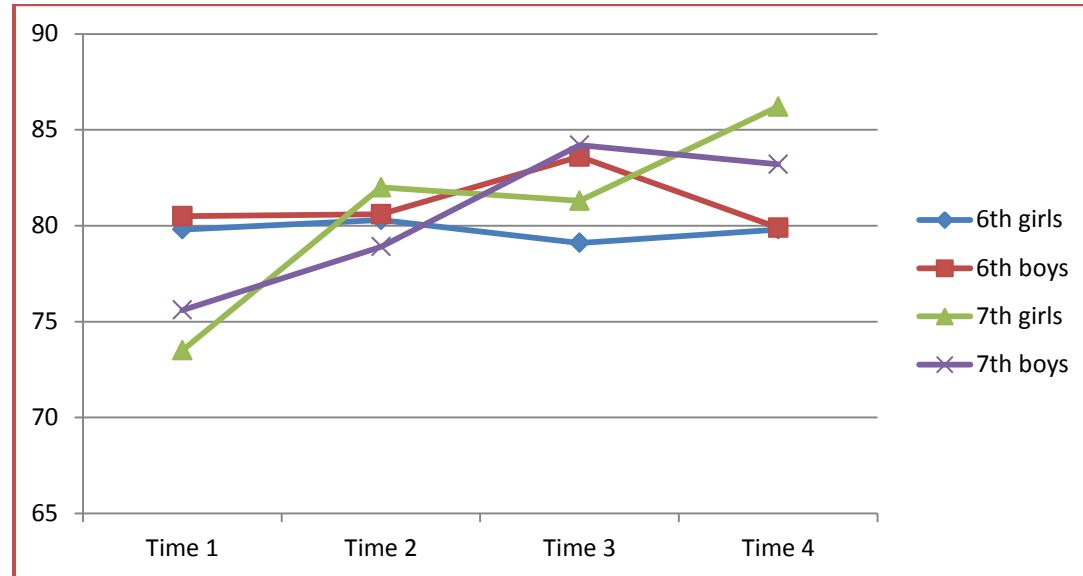
- Sixth grade students began their year with high self-efficacy ratings, as inexperienced raters, and therefore did not see major growth in efficacy at the group level. The 7th grade girls showed the greatest increases in mean ratings of self-efficacy across the year, followed by 7th grade boys.
- A paper with a detailed literature review and analysis of these scores is available at World Wide Workshop.org reports site.

Table 7. Average change in Globaloria self-efficacy from Time 1 to Time 4

	6th grade girls (N=44)			6th grade boys (N=45)			7th grade girls (N=44)			7th grade boys (N=42)		
How confident are you that you can...	T1	T4	change	T1	T4	change	T1	T4	change	T1	T4	change
figure out new things about editing the wiki	75.3	78.1	+2.8	82.4	77.6	-4.8	72.8	87.4	+14.6	74.6	80.6	+6.0
put your thoughts and ideas into words that are easy for people to understand on your blog	83.5	84.0	+0.5	72.3	79.7	+7.4	72.7	84.8	+12.1	75.8	84.0	+8.2
figure out what to do when you get stuck on something doing Flash ActionScript programming	71.4	79.1	+7.7	73.3	77.0	+3.7	61.5	83.8	+22.3	65.0	80.6	+15.6
search on the Internet to find help when you get stuck on something	77.0	74.9	-2.1	81.8	87.3	+5.5	74.9	84.8	+9.9	75.7	84.0	+8.3
Overall change			+2.2			+3.0			+14.7			+9.5

Table 7 presents the average scores and change in student-reported self-efficacy on the technological subscale from the beginning of the year (Time 1) to the end of the year (Time 4) by grade level cohort and gender. Although all students showed increases in almost every aspect of technology self-efficacy, the students in their first year of the program (the 6th grade cohort) reported less change from the beginning of the year to the end of the year than did students who were in their second year of the program (the 7th grade cohort). The researcher hypothesizes that this is because 6th grade students, who are new to the Globaloria class, may overestimate their ability to solve technological problems in comparison to students who already have been in the course for a full year.

Is there evidence of academic progress in STEM subjects according to course grades and state assessment scores?

- On average, students are making adequate academic progress in the core areas as well as meeting state accountability standards.

Table 8. Average course grades by grade level, gender, and semester

	6th grade		7th grade	
	Girls (n = 48)	Boys (n = 41)	Girls (n = 39)	Boys (n = 48)
First semester				
English language arts	83.4	82.2	89.1	85.7
Math	83.2	81.8	78.6	72.3
Science	80.3	78.6	86.7	82.9
Social Studies	84.6	83.3	90.5	86.4
Globaloria	89.0	84.2	92.8	84.4
Final grade				
English language arts	82.7	81.6	86.9	84.6
Math	80.9	80.5	78.3	74.5
Science	83.0	82.9	84.9	82.3
Social Studies	80.6	80.8	82.5	80.6
Globaloria	89.5	87.3	87.3	81.5

Note. Course grades were available for 93% of students in the data file. Among 6th graders final grades, 4 failed science, 5 failed math and 1 failed Globaloria. Among 7th graders final grades, 0 failed science, 1 failed math, and 6 failed Globaloria.

Table 9 a. Correlations between math final course grades and math TAKS performance

TAKS math objectives	6th grade			7th grade		
	Girls (n = 41)	Boys (n = 40)	Overall	Girls (n = 37)	Boys (n = 44)	Overall
1. Numbers, operations, quantitative reasoning	.568**	.487**	.505**	.587**	.454**	.485**
2. Patterns, relationships, and algebraic reasoning	.473**	.487**	.465**	.570**	.548**	.528**
3. Geometry and special reasoning	.494**	.486**	.463**	.446**	.313*	.362**
4. Measurement	.381*	.453**	.408**	.553**	.438**	.487**
5. Probability and statistics	.508**	.513**	.483**	.446**	.565**	.482**
6. Mathematical processes and tools	.464**	.621**	.550*	.388*	.576**	.462**

Note. *$p < .05$, **$p < .01$; ***$p < .001$.

- Among boys and girls at both grade levels, there are consistent, moderate correlations between math final course grades and the percentage of items correct for each TAKS math objective; that is, there is a moderate tendency for students who have higher math course grades to perform better on the math TAKS.

Table 9 b. Correlations between Globaloria final course grades and math TAKS performance

	Globaloria grades 6th grade		Globaloria grades 7th grade	

TAKS math objectives	Girls (n = 41)	Boys (n = 39)	Overall (n = 81)	Girls (n = 36)	Boys (n = 44)	Overall
1. Numbers, operations, quantitative reasoning	.437**	.503**	.425**	.366*	.267	.280**
2. Patterns, relationships, and algebraic reasoning	.235	.415**	.335**	.299	.318*	.290**
3. Geometry and special reasoning	.300	.283	.233*	.312	.137	.208
4. Measurement	.338*	.458**	.374**	.416*	.235	.322**
5. Probability and statistics	.490**	.291	.330**	.329	.456**	.375**
6. Mathematical processes and tools	.398*	.563**	.492**	.122	.353*	.252*

Note. *$p < .05$, **$p < .01$; ***$p < .001$.

- When students are grouped by grade level, there is a modest positive correlation between students' Globaloria final course grades and their performance on most math TAKS objectives.

Table 9 c. Correlations of 6th grade reading TAKS performance and Globaloria and Language Arts final course grades

TAKS reading objectives	6th grade Globaloria			6th grade Language Arts		
	Girls (n = 41)	Boys (n = 39)	Overall (n = 80)	Girls (n = 41)	Boys (n = 39)	Overall (n = 80)
1. Basic understanding	.224	.427*	.316**	.262	.660**	.478**
2. Literary elements	.155	.473**	.338*	.317*	.601**	.484**

3. Analysis using reading strategies	.080	.430**	.269*	.242	.529**	.396**
4. Analysis using critical thinking skills	.388*	.389*	.390**	.580**	.701**	.650**

Note. *$p < .05$, **$p < .01$; ***$p < .001$.

- Among 6th grade boys, there were consistent significant associations between the percentage of items correct on the TAKS reading objectives and final course grades in Globaloria and Language Arts.

Table 9 d. Correlations between 7th grade reading TAKS performance and Globaloria and Language Arts final course grades

	7th grade Globaloria			7th grade Language Arts		
TAKS reading objectives	Girls (n = 34)	Boys (n = 42)	Overall (n = 76)	Girls (n = 35)	Boys (n = 42)	Overall (n = 77)
1. Basic understanding	.578**	.145	.330**	.653**	.348*	.483**
2. Literary elements	.115	.077	.098	.264	.492**	.366**
3. Analysis using reading strategies	.212	.144	.164	.351*	.477**	.400**
4. Analysis using critical thinking skills	.388*	.008	.224	.523**	.245	.405**

Note. *$p < .05$, **$p < .01$; ***$p < .001$.

- Among 7th graders overall, there were consistent, moderate associations between the percentage of items correct on the TAKS reading objectives and final course grades in Language Arts. Among 7th grade girls there was a moderate correlation between Globaloria course grades and TAKS objectives 1 and 4.

Are there associations between student academic progress, enjoyment of the digital design process, and technological skills?

- Among 7th grade girls, there is a trend toward a significant association between enjoyment of the digital design process and final course grades in Globaloria, (see also table 3 and 4 above). There appears to be a linear association between enjoyment of the digital design process and other course grades, but the sample size may be too small to detect it.

Table 10. The average 7th grade final course grades by student-reported enjoyment group.

	Enjoyment group					
	Girls			Boys		
Average final course grade	Low enjoyment (25th percentile and lower) (n = 6)	Average Enjoyment (middle 50%) (n = 22)	High enjoyment (75th percentile and higher) (n = 7)	Low enjoyment (25th percentile and lower) (n = 16)	Average Enjoyment (middle 50%) (n = 17)	High enjoyment (75th percentile and higher) (n = 14)
English Language Arts	82.6	88.4	89.0	84.7	85.3	85.3
Math	74.2	80.1	80.9	76.9	75.0	72.9
Science	82.2	85.5	86.6	83.8	81.7	83.1
Social Studies	77.8	83.9	85.6	81.6	81.1	81.6
Globaloria	78.6	88.6	91.1	81.7	82.6	83.0

Note. ANOVAs and post hoc tests show no significant differences between enjoyment groups within gender. However, there is a trend toward significance $F_{(2,30)} = 3.27$, $p = .052$ between the low enjoyment and high enjoyment groups in their Globaloria grades. Post hoc tests indicate that this trend is driven by the association between enjoyment group and course grades among 7th grade girls.

Appendix

Table A-1. The table below shows TAKS vertical scale scores associated with the passing and commended levels of performance.

	6th read	6th math	7th read	7th math	7th write
Pass	644	637	670	670	2100
Commended	797	783	829	823	2400

Table A-2. Summary of student performance data available in the analysis data set.

Any available data	6th Graders (n = 97)		7th Graders (n = 93)		All students (n = 190)	
	N	Percent	N	Percent	N	Percent
Self-efficacy	95	98%	93	97%	185	97%
Any course grades	89	92%	87	94%	156	93%
Any TAKS math objectives	89	92%	93	100%	182	96%
Any TAKS reading objectives	89	92%	88	95%	177	93%
Any Regular TAKS math	38	39%	89	96%	127	67%
Any regular TAKS reading	35	36%	89	96%	124	65%
Any regular TAKS writing	-	-	39	42%	39	21%
Any ELA benchmarks	0	0%	82	88%	82	43%