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Learning by Experience in a Standardized Testing Culture: Investigation of a Middle School Experiential Learning Program

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Abstract

Standardized testing pressure sometimes discourages schools from broadly implementing experiential learning opportunities. However, some K-12 schools are challenging the trend with greater commitment to learning by experience. STREAM (science, technology, reading, engineering, arts, mathematics) school is a project-based program providing students with opportunities to connect content with authentic experiences at the middle school level. Using a convergent-parallel mixed methods design, researchers investigated the program and discovered (a) students in the experiential program perceived school as more enjoyable, (b) learning to successfully collaborate was a key factor leading to positive experiences for students, (c) students showed evidence of noncognitive skill growth, and (d) students in the experiential program progressed appropriately on standardized tests and did not differ significantly from their counterparts in traditional classes.

Keywords

PBL, collaborative learning, experiential learning, middle schools

Introduction

The purpose of this study was to (a) determine the driving factors related to positive and negative student experiences in a middle school experiential learning program and

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(b) consider if participation in the experiential learning program affected standardized test achievement relative to traditional instruction. Researchers used a convergent-parallel mixed methods design (Creswell & Plano Clark, 2011) to analyze data collected from interviews, field observations, and standardized test scores to answer two driving research questions:

> **Research Question 1 (RQ1):** What factor(s) contributed to and detracted from positive student experiences in the experiential learning program?
> **Research Question 2 (RQ2):** How did experiential program students' standardized test scores compare to their peers in traditional classes?

Background

Experiential learning is an active pedagogy emphasizing concrete experience and abstract conceptualization (Kolb, 1984). Problem-based and project-based learning are two types of K-12 experiential learning pedagogies. By definition, *problem*-based learning is an approach that integrates theory and practice as students seek to gather information about real-world problems and propose viable solutions (Savery, 2006). Similarly, *project*-based learning engages students in meaningful activities as they create products to help solve problems or answer driving questions (Bell, 2010). Although similar in their emphases to transition students from passive observers to active participants, project-based learning requires students to create products or performances that adhere to given specifications, whereas the deliverables from problem-based learning are often more open-ended (Savery, 2006) and can be written or orally presented. According to the Buck Institute for Education, problem-based learning is a subset of project-based learning, and the two pedagogies are really two sides of the same coin (Larmer, 2015). Therefore, we define project-based learning (PBL) to mean experiential activities involving the following: open-ended, driving questions or problems; authentic application of content and skills; student-directed learning; and student creation of products, presentations, or performances to address the driving question or problem (Larmer, 2015). In contrast, we define traditional learning as teacher-directed instruction using primarily static materials (Dewey, 1938).

Standardized Testing

The No Child Left Behind Act of 2001 (NCLB) required U.S. states to administer yearly testing, monitor student proficiency, create yearly report cards, track teacher qualifications, and essentially ensure that all schools were performing at appropriate levels (Klein, 2015). As a direct result, NCLB increased the frequency of high-stakes testing (Cocke, Buckley, & Scott, 2011). Standardized testing has been perhaps the biggest hurdle preventing wide-range adoption of experiential-type learning pedagogies. In a 2012 review of literature on the topic, Anderson presented 35 empirical studies linking accountability policies associated with testing to their resultant science education practices. Ninety-seven percent of the studies in the review reported negative impacts of test-based accountability, while only 26% cited positive perspectives. The highlights from this review that pertain to experiential-type learning were as follows: (a) principals felt testing policy drove instruction more than research-based reform efforts, (b) district leaders were slow to adopt innovative methods because standardized tests evaluated schools "in a much more traditional fact-based method" (p. 117), (c) teachers felt more inclined to teach to the test as opposed to incorporating student-centered activities, and (d) teachers felt they had less time to pursue student interests and incorporate experimentation because of the need to use direct instruction to prepare students for tests.

As the Anderson (2012) study revealed, some teachers felt pressured to implement practices such as "teaching to the test" where items that appeared more frequently on standardized tests were emphasized over less frequently assessed items (Jennings & Bearak, 2014). In another study, 59% to 64% of teachers in the sample agreed they "omit certain information because there is not enough time to fit it in because of state tests," and they "teach to the state test more than [they] normally would" (Moon, Brighton, & Callahan, 2002). The unintended consequences of teaching to the test include narrowing of the curriculum, limiting holistic student learning, and placing undue pressure on educators (National Council of Teachers of English, 2014).

Modifying the System

Many organizations have proposed new frameworks and standards in an effort to move the current system toward a more experiential model. For example, Partnership for 21st Century Learning, North Central Regional Educational Laboratory, Metiri Group, Organisation for Economic Co-Operation and Development, Association of American Colleges and Universities, and the International Society for Technology in Education have suggested educational frameworks emphasizing experiential learning. Although these frameworks differ in details, they share a focus on developing noncognitive skills such as collaboration, communication, critical thinking, and problem solving.

Many current employers and employees have concerns that noncognitive skills are poorly developed in many current graduates. For example, when asked to identify the most important skills needed for success in their industries, over 400 U.S. employers ranked the following skills as most important: teamwork/collaboration, oral communications, professionalism/work ethic, and critical thinking/problem solving (Casner-Lotto & Barrington, 2006). These same employers rated their own recently hired employees as highly deficient in many of these areas.

These findings suggest disconnects between what modern-day businesses want in their employees and what academic training provides. Mastering a single trade or subject no longer provides the skill set leading to successful navigation of many 21st-century jobs. Instead, employees need to be able to think and problem-solve quickly, adapt accordingly, and communicate effectively. Experiential learning activities have been shown to increase critical thinking skills (Heinrich, Habron, Johnson, & Goralnik, 2015), develop teamwork (Cater & Jones, 2014), and contribute to higher order thinking skills

(Ives & Obenchain, 2006). Furthermore, the best time to introduce students to these noncognitive skills is during the formative middle school years (Kay, 2009).

However, in spite of these findings, U.S. education has steadily progressed toward a more standardized testing and "one-size-fits-all" approach to prepare students for life after K-12 (Barnes & Slate, 2013). Although recent passage of the Every Student Succeeds Act (ESSA) inspires hope that conditions may change, the current reality in the United States is that standardized testing is the primary mechanism for measuring success and determining funding. The current study offers critical information on how schools can balance the expectations of future employees and communities with the current obligations of standardized testing.

Committing to Experiential Learning—The STREAM Program

"Industry keeps saying we need this product, yet . . . there's a gap," shared the middle school principal who was instrumental in developing the program used as the context for this study. STREAM (science, technology, reading, engineering, arts, mathematics) school is an experiential program embedded in a traditional middle school in the Midwest. STREAM teachers work with local professionals and staff of a nonprofit, outdoor education organization to develop authentic experiences for students that connect state-mandated content standards to real-world projects. As often as possible, projects are connected to the outdoors. Projects are designed to be authentic, engaging, and educational while allowing students to be at the center of the learning process. In the year encompassing this study, STREAM students participated in four major projects (Table 1).

As one of the founding STREAM teachers shared

> We need to have more experiences that are [authentic]. Our kids and teachers, our population, our communities . . . we need to have [this model] . . . That's real world . . . and that's the model that needs to happen . . ."

Developed in 2014, STREAM was based on several different experiential frameworks including gold standard PBL (Larmer & Mergendoller, 2015), human-centered design (Zoltowski, Oakes, & Cardella, 2012), the creative sequence ("The Creative Sequence," n.d.), noncognitive skill development, and outdoor education.

Unlike short-term experiential *activities* that other schools utilize, STREAM was a *programmatic* change. Students' mathematics, science, and elective credits were combined into one integrated course. The STREAM program's 3-hr block was embedded within the traditional middle school day with students meeting every day of the week. State-mandated content standards were addressed within the context of the program, and students in the program took standardized tests, as did their peers in traditional classes.

At the time of this study, two teachers with vast experiences in collaborative teaching and experiential learning facilitated the new program. Students met in an open classroom that was repurposed from its original design as a workshop. Due to the 3-hr block of time, students were able to dedicate significant time to projects and go on

Table 1. Major Projects for Experiential Learning Program During 2014-2015 School Year.

Project	Driving question	Focus	Duration	Deliverable product(s)	Presentation style and venue
Footprints	How do we minimize the impact school groups have on the high school wetland?	Human impacts on wetlands and strategies to preserve a wetland at the district's high school	4 weeks	Preservation plan and budget to save high school wetland from overuse and abuse	"Shark Tank" presentations with questions from community professionals held in board room of local corporation
Let's Race	How might we design the ultimate cardboard sled that is built for speed?	The engineering design process and data collection	4 weeks	Racing snow sled made of cardboard and duct tape	Sled race on private property
Gone Fishing	How might we bring a fresh perspective to the life of fish within our local watershed?	Fisheries populations and the effects of pollution on these populations	8 weeks	Visual art project and artist's statement highlighting an important aspect of fisheries biology	Walk-through art show on campus of higher education institution
Energize Me	How might we design a world-class tour that engages the community in the education of energy stewardship?	Energy stewardship and best-practices of local businesses in regard to sustainability	6 weeks	Interactive, online tour of local community highlighting best sustainability practices of local businesses	Formal stage presentations on campus of higher education institution

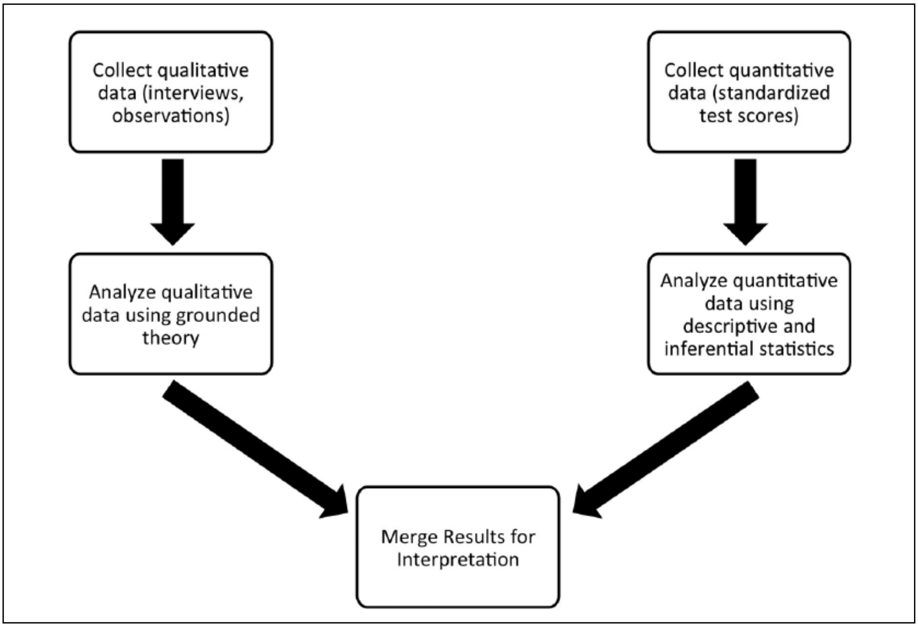

Figure 1. Flowchart of the convergent-parallel design used in this study as per Creswell and Plano Clark (2011).

off-campus trips. The purpose of this study was to determine the driving factors related to positive and negative student experiences in the new program and consider if participation in the program affected achievement on standardized tests.

In the current study, STREAM school, experiential class, and experiential program are used synonymously. Similarly, comparison class and traditional class are used synonymously in reference to students in the middle school who were not in the STREAM school program. As per Dewey's (1938) definition, the traditional classes were characterized by (a) learning primarily from texts and teachers, (b) instructors using primarily static materials, and (c) larger focus on teachers directing the learning as opposed to student-centered learning.

Method

Researchers used a convergent-parallel mixed methods design (Creswell & Plano Clark, 2011) to collect and analyze qualitative and quantitative data. Figure 1 illustrates the relationships of the various data streams and analytical methods.

Positionality and Rigor

The research team for this study was composed of professors and students from an institute of higher learning. The researchers were not affiliated in any way with the middle school housing the experiential program. Furthermore, researchers followed various strategies to maintain analytical rigor. These included strategies suggested by Wolcott (1994) such as unobtrusive observation, archival of data, and constant collaboration. Moreover, researchers adhered to criteria for validity as espoused by R. B. Johnson (1997). These strategies included extensive field time, using low inference descriptors, and triangulation. More specifically, researchers triangulated (a) data from multiple sources including students, teachers, administrators, and parents; (b) methods through gathering and analyzing both qualitative and quantitative data; and (c) investigators by including multiple researcher perspectives throughout the study.

Population and Sample Descriptions

A total of 197 seventh-grade students attended the middle school during the 2014-2015 school year. Out of the 197 students, 73 applied to be in the experiential program. Due to a variety of logistical factors, administration capped enrollment at 60 students. As researchers were outside parties not affiliated with the middle school, the research team did not have input in how students were chosen to be part of the experiential program. However, according to school officials, at no point was academic standing or performance considered in the selection process. Due to attrition from incompatible schedules, family relocations, and so forth, a total of 57 students completed the year-long program. Approximately 140 students were exclusively in traditional classes.

Participants for the qualitative portion were recruited through email and via written solicitations that were sent home with students. As per the researching institution's Human Subjects Review Board, student participation required volunteer consent from both parents and students, as students were below 18 years of age. Qualitative data were collected from students, teachers, administrators, and parents who volunteered for this portion of the study. Interviews were conducted with 25 students (19 experiential; 6 traditional), two STREAM teachers, and the middle school principal. In addition, seven parents completed an online questionnaire.

Data Sources

Table 2 includes a summary of the data sources used in this study.

Interviews. Researchers conducted 12 hrs of semistructured interviews with all consenting students, teachers, and administrators. All in-person interviews were conducted on the middle school campus, and interviews were recorded and transcribed verbatim. Parent responses were collected online using an electronic form.

Observations. Over the course of the school year, six researchers spent 131 hrs observing students in the experiential program. Observational data were archived via voice recorders, video cameras, and field notes. Observations took place at the middle school, at public events where students shared their projects, and on trips associated with student project work. While observing, researchers took extensive open field

Table 2. Sources and Characteristics of Data.

Context	Source/informants	Data
Interviews	Students (n = 25), teachers (n = 2), parents (n = 7), and administrator (n = 1)	Audio-recorded discussions, transcripts, field notes
Classroom observations	Experiential learning students (n = 57)	Video and audio-recorded classrooms, transcripts, field notes
Test scores	Experiential learning students (n = 55) and other seventh graders in traditional classes (n = 127)	ACT Explore standardized test scores

notes, highlighting events and interactions between students as per Corbin and Strauss (2015). Researchers converted these open field notes to expanded write-ups and coded them as per Miles, Huberman, and Saldana (2014).

Test Scores. Anonymous ACT Explore scores were collected for all seventh-grade students at the middle school. The Explore is the first of a three-test progression for the ACT college entrance exam and is typically administered in seventh or eighth grade. The Explore test had 128 questions, and students received scores on each section out of 25 possible points. Students took the Explore in both the fall of 2014 and the spring of 2015. The Explore was used as the standardized test for all students in the seventh grade during the 2014-2015 school year as the state-mandated standardized test was new and, at the time of this study, was not expected to be administered regularly in its current version (Burns, 2015).

Data Analysis

Qualitative data were analyzed using grounded theory (Strauss & Corbin, 1990). In the first stage of open coding, transcribed text was read and coded with a single word or phrase summarizing the participants' views. Researchers met regularly to determine common themes (a process called axial coding). As themes began to emerge, researchers used constant comparison (Boeije, 2002) to create, revise, and ultimately establish a reliable list of thematic categories. From these categories, a codebook was developed and used to identify the central phenomenon and relate all categories using Strauss and Corbin's paradigm model. The software package NVivo was used throughout this process.

Furthermore, quantitative ACT Explore test scores were analyzed using a $2 \times 2 \times 4$ repeated measures multivariate analysis of variance (MANOVA) run on IBM SPSS Statistics 22. Analysis of variance (ANOVA) and Bonferroni post hoc tests were used to explore specific differences between and within groups.

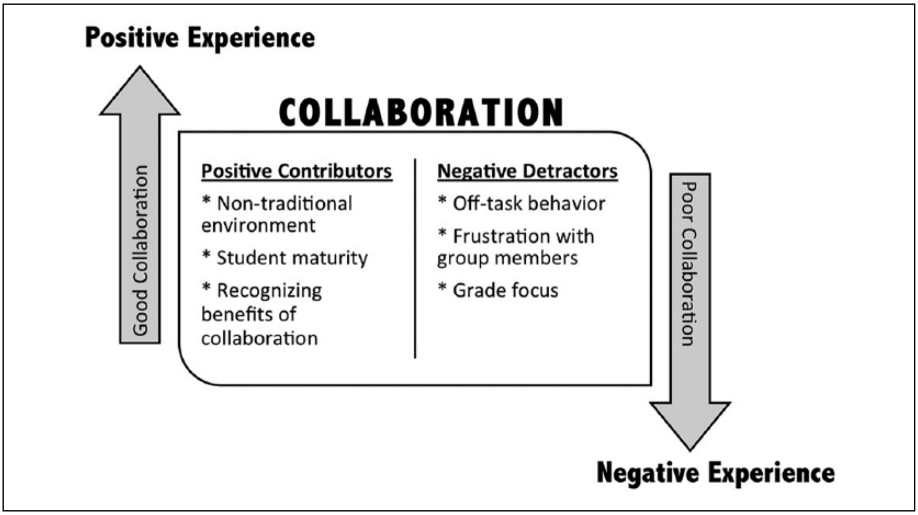

Figure 2. Conceptual model derived from the current study illustrating the centrality of collaboration to positive or negative experiential learning involvement.

Findings

Overall, most students viewed the experiential program as motivating: "I like coming to school, because I'm excited about STREAM school"; "I look forward to STREAM school more than my other classes"; "STREAM school is just different. It's more stimulating, more fun than just the regular classroom." Figure 2 illustrates the conceptual model developed during this study to explain why many students reported overall positive experiences while others reported negative experiences. In this study, Strauss and Corbin's (1990) paradigm model led researchers to identify collaboration as the central phenomenon, with several factors contributing to and detracting from the quality of collaboration.

In addressing RQ1, researchers turned to the paradigm model (Strauss & Corbin, 1990). The specific reasons behind students' fondness for the program were diverse, but most of the factors were directly related to the experiential nature of the program: (a) outdoor connection—"I've been able to do what I like, go outdoors, doing stuff. So, doing that makes it more fun, and then I actually enjoy going to school . . . more than ever"; (b) hands-on approach—"I feel like I'm a little bit more excited. Because in sixth grade, last year, I didn't feel that excited to do math or science. When I got to STREAM school, I look forward to it because I know that we're doing something hands-on wise"; (c) relevance of the material—"I thought that math is by itself and science is by itself . . . I'm never going to need them in life. Now that I've been exposed to these experiences, I have to make sure that I know what I'm doing"; and (d) chance to excel—"Well, this helped me with other classes. Like, I can apply more things to the project that we are doing in another class. Normally, I would just be like, 'Do what they tell you to do.' But now, I can go above what the standard is."

Prior research suggests well-supported outdoor programs can increase student interest (Kenney, Militana, & Donohue, 2003), and students in this study reiterated the point. Although the outdoors was a major hook that played on the intrinsic motivations of many students, some projects did not have an outdoor component. Furthermore, researchers heard from several participants that the experiential program was appealing for many reasons beyond an outdoor connection.

> My favorite part is not just the outside . . . The people who aren't in [the program] say that because they think it's the outside. That's what I thought in the beginning, too. But, it's so much more than that. It's learning to present in front of people. It's a skills-to-success class too. (Student)

These factors led researchers to the conclusion that collaboration was the key factor in determining how students responded to the program.

Detractors From Collaboration

Researchers identified three primary detractors that affected collaboration among student groups: *off-task behavior, frustration with group members*, and *grade focus*.

Off-task behavior. This category was defined as instances when students willingly disengaged from collaboration on projects to pursue unrelated tasks. In experiential, open environments, this type of behavior is not uncommon (Cater & Jones, 2014). In the experiential program, students were allowed to self-manage a large portion of their time. Some students readily admitted they took advantage of the freedom, physical size of the classroom, and the number of students in the classroom: "Sometimes I goof off a little bit more because you feel like you can get away with more stuff because it's a bigger space and they're not watching you as much." Teachers were well aware of this challenge, sharing how "the biggest problems we have are with students who we cannot trust when our eyes are not on them. . . . Complete task avoidance that disturbs other people is probably our biggest thing."

Technology, which played an important role in the program, sometimes became the main distraction. Researchers' field notes contained many entries about technology-related distractions: "I noticed some kids that displayed strong motivational skills and were able to keep their groups on task, and other kids that simply were concerned with abusing the phone leniencies"; "I am not used to seeing so many phones in a classroom setting—A few students had their phones out at different points."

Frustration with group members. The last two conditions that negatively affected collaboration were somewhat different from off-task behavior because they occurred when students who were willing to collaborate chose to disengage from their respective groups and work alone. The frustration category was defined as instances when students became upset with or indifferent toward others in their group. The frustrations felt by students often resulted in them trying to do the work themselves, thereby reducing collaboration. The following quotes from students who wanted to collaborate highlighted how they were negatively affected when undisciplined students disengaged to follow their impulses: "I might get a group that doesn't work as much, and then I work by myself so I get stuff done"; "And my group really slacked off, and I just felt like I had to pull their weight"; "Sometimes I'll just end up doing all their work for them."

Controlling behavior was also a point of frustration for some: "There are people who want to control everything, and you don't get a say in what you're supposed to be doing." Once again, the common response when students faced this challenge was isolation. "I definitely prefer to work alone, because I don't like being bossed around . . ."

Grade focus. Grade focus, the last detracting factor, was defined as instances when students became self-absorbed with their individual project grades. For many students, collaboration was a necessary casualty if it meant getting better individual grades. When asked how he would handle conflict during project work, one student responded,

> If we are getting individual grades, then I would just do my part . . . if it's not individual grades, then I would see if they [group] could just do work better, and I would see if the teacher could like, put me in my own individual grade and have them in their grades.

Contributors to Collaboration

Researchers identified *experiential learning environment, student maturity*, and *appreciating the benefits of collaboration* as factors that positively contributed to collaboration among students.

Experiential learning environment. The pedagogy used by teachers is an important contributor to the learning environment. For example, the PBL approach has generally been advertised as an effective method for motivating students beyond what is typical in traditional settings (Bell, 2010). Other research credits the positive responses that students have toward PBL to the applicability of the projects to students' lives and the potential for projects to help the greater community (Bell, 2010; Cho & Brown, 2013; Wurdinger & Qureshi, 2015). Furthermore, when facilitated properly, PBL forces students to be more collaborative and thoughtful as they work together to solve problems (Cooper, Cox, Nammouz, Case, & Stevens, 2008).

However, creating effective learning environments is about more than just pedagogical approaches. From the earliest ideas espoused by Dewey and Hahn, experiential learning has been about empowering students to maximize their potential and prepare them for a life of service to others (Dewey, 1938; James, 1990). This experiential tradition continues as educators seek to develop student-centered classrooms (Estes, 2004).

In this study, students in the experiential program were given control over much of their time and project direction. In most cases, students responded positively. "You have a lot more freedom, and I like that aspect"; "I like that they [teachers] kind of let you go off and do your own thing for most of the time . . . they don't control everything you do." The freedom empowered students to let their creativity come to the forefront: "There are certain things you can take further than others when you have the freedom. . . . Like the art project, I think there was a lot more freedom because there were so many different art ties." At other times, students abused this freedom, and teachers became frustrated. "[The biggest challenge is] when we give that ownership over to the students, it creates a new dynamic of problems. And how to navigate those problems has been our biggest whole loss of sleep and frustration" (teacher).

Student maturity. As students worked together over the course of the year, many began to express more mature ideas about what it meant to collaborate and what role they personally played in positive collaborative experiences. "It's good to get to know people. And then it's good to work together with people"; "I became a little more open to being in groups, because I've started talking to a lot more people besides my little friend group."

For some students, the first step to better collaboration was realizing their contributions to a given project were only pieces of a larger puzzle. "I guess toward the end [of the project], it started to seem like I might not have been the best partner . . . my part was probably just part of the idea" (student). For this particular student and others, realizing products turned out better because of collaboration was a critical maturation point that led to better collaboration from that point forward. For example, the same student from the previous quote went on to share, "I think if I had done [the project] by myself, it may have been not as good . . . we both did a big thing to it."

Recognizing the benefits of collaboration. As students matured over the course of the year, they began to recognize different benefits of collaboration. First, students realized collaboration helped them efficiently meet deadlines for their deliverable products.

> You can normally get it done quicker instead of having to do it by yourself. You do it one step at a time. Like one person can do a step, the other person can do a step. And then if you just work together, you'll get it done quicker and more efficiently.

Second, students began to appreciate how other learners brought different skills, knowledge, and/or perspectives to a project that made the project better. We defined this factor as distributed expertise (Brown et al., 1993). One student summarized as follows, "In a group, I feel like everyone has their point of view and their perspective in what they want in the project, and they combine them all together to make a bigger project." Third, some students began to understand how important collaborative skills were to their future. For these students, working through challenges with other people became a dress rehearsal for the future. One student shared:

Table 3. Descriptive Statistics and Pre–Post Comparisons of ACT Explore Test Scores Over Time (Fall to Spring) for Each Participant Group (Experiential and Traditional).

	Experiential (n = 55)					Traditional (n = 125)				
	Fall 2014		Spring 2015		Fall to spring	Fall 2014		Spring 2015		Fall to spring
Section	*M*	*SD*	*M*	*SD*	*p*	*M*	*SD*	*M*	*SD*	*p*
English	13.47	3.02	14.73	3.53	<.001	13.58	3.52	15.15	3.93	<.001
Math	14.36	2.97	15.69	3.47	<.001	14.66	3.75	16.25	3.43	<.001
Reading	14.31	2.78	14.76	3.06	.273	13.99	3.51	14.67	4.07	<.01
Science	16.44	2.02	17.16	2.49	<.05	16.17	2.88	16.84	3.47	<.001
Composite	14.70	2.20	15.59	2.59	<.001	14.57	3.39	15.59	3.39	<.001

> Group work is a good skill to get used to. It's going to happen in high school, and probably in college and just in general, real-life . . . It's a skill that everyone has to have at some point . . . You're always going to be working with other people, and they aren't always the best workers, they don't always try as hard as you do. You just have to live with it and do your part and try your hardest.

Standardized Test Scores

To address RQ2, researchers compared the ACT Explore test scores of students in the experiential learning program (n = 55) to scores of students in traditional classes (n = 125; Note: listwise deletion reduced previously reported n values). Students took the ACT Explore test at two time points: fall 2014 and spring 2015. Students received scores in five areas: English, Reading, Math, Science, and Composite (Table 3). In all comparisons between students in the experiential program and traditional classes, the differences in means were not significant. In effect, these comparisons showed students in both groups started and finished on the same level in regard to standardized test scores. The mean scores for students in the experiential program were higher (but not significantly) than traditional students in the fall of 2014 on the following tests: Reading, Science, and Composite. In addition, the mean scores for students in the experiential program were higher (but not significantly) than traditional students in the spring of 2015 on the following tests: Reading and Science. Composite scores were equal in the spring.

A repeated measures MANOVA analysis revealed a significant multivariate effect of test date on students' ACT Explore scores—V = .353, $F(4, 175) = 23.88$, $p < .001$, $\eta^2 = .353$. However, there was no significant effect for participant group—experiential versus traditional; V = .028 $F(4, 175) = 1.28$, $p = .281$, $\eta^2 = .028$—nor was there a significant interaction between participant group and test date—V = .008, $F(4, 175) = .352$, $p = .842$, $\eta^2 = .008$. Follow-up analyses on each subject test using ANOVA and Bonferroni post hoc tests confirmed a significant main effect of test date on each test for traditional students and a significant main effect of test date on each test other than Reading for experiential learning students (see "Fall to spring" columns in Table 3).

The significant overall main effect of test date was not surprising, as students were expected to grow in their knowledge from the fall to the spring. However, it is interesting to note that mean Reading scores for experiential learning students increased from the fall to the spring (14.31 to 14.76), but the increase (unlike all other subjects) was not statistically significant. In other words, experiential learning students did not show significant increases in Reading scores from fall to spring. However, mean Reading scores for experiential learning students were not significantly different from mean Reading scores of traditional students in either the fall or the spring.

Discussion and Implications

In the United States, national initiatives (President's Council of Advisors on Science and Technology, 2010) and outcries from businesses (Bell, 2010) stress the need for K-12 schools to implement experiential learning opportunities to better prepare students for the future. However, standardized testing pressure sometimes results in fewer opportunities for experiential learning. This study informs future conversations about how experiential programs can meet calls for more rigorous learning, even within the current standardized testing culture. Furthermore, results from this study suggest experiential learning in the investigated context: (a) provided an engaging context that excited students about school and changed their outlook on the future, (b) contributed to students' noncognitive growth, (c) was dependent upon successful student collaboration which required a delicate mixture of freedom and support, and (d) did not negatively affect students' standardized testing scores.

Engagement and Outlook

Students in the program consistently expressed how they enjoyed the experiential learning program more than traditional classes. "I used to dread coming to school [before the experiential program] because I didn't want to . . . I wasn't really open to talking to new people." Furthermore, students saw, often for the first time, connections between school and their futures.

> I asked this question many times, "How will [school work] apply to me in the future?" . . . I'd probably be asking the same question this year with a bunch of stuff. But instead of doing it in the classroom, you get to see how you use it in the real world.

Another student discussed how working directly on projects changed her outlook on the future: "[STREAM] taught me to think about more jobs. Like, learn there is stuff that you can do that represents science that I could do when I'm older." The experiences in this program gave her the vision and confidence to pursue something she had not even thought possible: "I wanted to be a teacher, but then I got into STREAM school. And now, I want to be an engineer or marine biologist."

Noncognitive Growth

Students consistently mentioned how they grew in ways far beyond traditional academic measures (i.e., noncognitive growth). One student shared, "I think doing the presentations has helped me . . . they're throwing us into doing all these projects. And now I can go in front of somebody and talk to them." Another student reiterated how the confidence she gained in the program transferred to other school situations.

> I never wanted to get called on . . . I never wanted to be the one who got picked first and then mess up and have everyone laugh at me. Now, I know that it's okay that I stumble. Then, I just get back up and try again.

When students were asked to identify specific reasons for their growing confidence, they pointed to concrete experiences. "You learn a lot more because you get to learn from your mistakes that you make, unlike in the other class where they're walking you step-by-step through what you have to do." By working through their own difficulties, students improved their problem-solving abilities, an outcome supported by other research (Cooper et al., 2008). The collaborative nature of PBL also fostered accountability and willingness to make revisions as students were afraid to let their fellow classmates down, an outcome supported by Bell (2010) and D. W. Johnson and Johnson (2009).

Students acknowledged how they grew as a direct result of more responsibility being placed on them. As mentioned by Cater and Jones (2014), students need experiences to develop skills leading to success. STREAM school provided those opportunities, and most students positively responded.

> The responsibilities that we have in [the experiential program] have really pushed me to be more responsible than I am. Like taking my work to a deeper level. Understanding that even if that means re-doing, putting extra time to research . . . asking more questions . . .

Although the experimental design of this study prevented researchers from making causal claims, students did not hesitate to explicitly attribute their noncognitive growth to the program.

Freedom and Support

As mentioned previously, students in the experiential program had more freedom than in traditional classes. Freedom was, from the perspective of the research team, a necessary ingredient for students to learn how to collaborate effectively. This finding is consistent with Hahn's conviction that "students should experience failure as well as success" (James, 1990, p. 8). Furthermore, Hahn advocated the nurturing of youthful passion as opposed to smothering this energy (James, 1990).

However, giving students freedom without support in school situations is a recipe for disaster (D. W. Johnson & Johnson, 2009). To maximize cooperative learning, these authors advocated the teaching of interpersonal and small-group skills. In the current study, researchers found evidence of this happening as teachers provided scaffolding for the development of collaborative capacity, primarily through relational support. For example, in one particular case, researchers witnessed an altercation between two students related to their project work. Instead of immediately jumping in, the teachers allowed students the opportunity to work it out themselves. When intervention was needed, the teachers stepped in and provided support. Students were given the leeway to work within wide boundaries as advocated by Hahn (James, 1990), and this freedom helped students learn how to collaborate more effectively. Sometimes the process was messy, and interpersonal support, as suggested by D. W. Johnson and Johnson (2009), was paramount to the process of building collaborative skills.

Maintaining Standardized Test Scores

Although past research has indicated that innovative pedagogy can coexist with high standardized test scores (Bartosh, Tudor, Ferguson, & Taylor, 2009), few programs have dedicated as much time (at the expense of "traditional" seat time) to experiential learning as STREAM school. Evidence from this study suggests the program did not negatively affect standardized test scores.

When looking at scores on the ACT Explore, experiential program students significantly progressed from the first time they took a test to the last time. The only exception was Explore Reading. Although reading is in the STREAM acronym, STREAM students were actually enrolled in a traditional English-Language Arts class. So, "blame" cannot be placed on the experiential program for overlooking this area of development. Furthermore, there were no cases when the final scores (final meaning the last administration of a test in the school year) on any test differed significantly between experiential program students and traditional students. This finding has huge implications as it suggests STREAM school students were more than capable of doing all that was associated with the experiential program while still performing adequately on standardized tests.

Conclusion

For some schools, meeting standardized testing expectations and providing experiential learning opportunities seem challenging. Although experiential pedagogies like PBL prepare students to meet the expectations of employers and community partners by strengthening the development of noncognitive skills (Bell, 2010; Cho & Brown, 2013), funding and evaluation are often determined by test performance. In this study, an experiential program was investigated to determine the driving factors related to positive and negative student experiences and consider if participation in the program affected achievement on standardized tests. Although the study's design precluded researchers from making direct causal links, evidence suggests associations between the experiential program and students' enjoyment of school and growth in noncognitive skills. Furthermore, providing students with freedom and relational support seemed to foster better collaboration between students. Finally, experiential program students showed adequate progression on standardized tests and matched up favorably with their peers in traditional classrooms.

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