Evaluating the Online Pathway to Graduation Program

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Executive Summary and Major Findings

This brief describes an evaluation of the Online Pathway to Graduation (OPTG) program in Montgomery County Public Schools (MCPS) during the 2012−2013 school year. The OPTG program provides students who participate in an alternative learning opportunity to earn course credits and graduate from high school. The purposes of the evaluation are: 1) to examine the staff and student experiences in the program, and 2) to assess whether the program helped student participants earn or recover credits necessary for high school graduation. The major findings are summarized below.

The 67% graduation rate for Grade 12 students in the 2012–2013 OPTG program indicated that the program met its goals to some extent. However, the OPTG course completion rate was only 37% for all enrolled courses. Some students enrolled for a course but did not spend any time working on the course. During 2012–2013, the High School Assessment (HSA) passing rates were 61%, 36%, and 33% for test takers in biology, algebra and English.

Staff and students who completed the courses and responded to the survey reported positive experiences. Staff and student survey respondents also identified areas of strength and improvement for the OPTG courses. One of the major concerns by staff was how to support and monitor student progress so they could succeed in the courses. One of the students' major concerns was the need for more staff support.

Recommendations to the Program Staff

Based on the evaluation, the following recommendations are proposed:
1. Closely monitor student activities and progress in the OPTG courses.
2. Increase teachers' support to students, especially in mathematics.
3. Provide orientation and guidance to students so they can effectively navigate the OPTG course and assessment system.
4. Encourage home school staff who know their students to work with OPTG teachers in monitoring student progress and providing help when support is needed.
5. Track students accurately by providing Apex Learning, Inc (Apex), the OPTG contractor, with MCPS student identification numbers.

Background

OPTG is a one-year online program available to current or former MCPS students (MCPS, 2013). The program goals are twofold: 1) to provide an opportunity for students to complete

courses required to achieve a high school diploma online, and 2) to provide students with an alternative method to obtain high school credit. The students who need three or fewer credits for high school graduation may take courses online with teachers available to monitor their progress and provide support as needed. Students may progress at their own pace, complete course assignments, demonstrate mastery of course objectives, and receive course credits after they successfully complete the courses. More information about the OPTG program is included in Appendix A, and a review of related literature is provided in Appendix B.

This study addressed the following questions:
1. Who enrolled for the 2012–2013 OPTG courses?
2. How many OPTG students took and passed one or more of the required HSAs in 2012–2013?
3. How many Grade 12 OPTG students graduated by June 2013?
4. How many OPTG students dropped out of school by June 2013?
5. How did OPTG students perform in the OPTG courses they took?
6. What were the staff experiences in the OPTG program?
7. What were the student experiences in the OPTG program?

Methodology

This evaluation included both formative and summative evaluation components. To examine the OPTG program implementation, the director and coordinator in charge of the OPTG programs were interviewed. In addition, two web-based surveys, addressing the experiences of the OPTG students and staff members working with the online learning program, were administered in spring 2013. All students enrolled in the OPTG courses, and all four OPTG teachers were asked to complete the surveys. Two survey reminders were sent to students and staff in an effort to increase response rates.

The OPTG contractor Apex reported course grades for the OPTG students as of May 23, 2013. However, the Apex data had no student identification numbers (IDs) and demographic information. Office of Shared Accountability staff had to enter student IDs by hand before merging files. All OPTG student participants in 2012−2013 were included for outcome analyses. Descriptive analyses were conducted for course outcomes and surveys.

Results

The results are presented in the order of evaluation questions. It is important to keep in mind that that statistics should be interpreted with caution when the sample size is small.

1. Who enrolled for the 2012–2013 OPTG courses?

During the 2012–2013 school year, 186 students enrolled in at least one OPTG semester course (Table 1). Of the 186 OPTG students, 79% ($n = 147$) of them were in Grade 12 and 13% ($n = 25$) were in Grade 11. For the OPTG students who dropped out of school before 2012–2013, their grade levels were based on their last official enrollment status when they dropped out.

More male (52%, $n = 97$) students enrolled for the OPTG courses compared to female students (48%, $n = 89$). The majority of OPTG students were Hispanic/Latino (38%, $n = 70$) and Black or

African American (32%, $n = 60$). Among the OPTG students, 43% ($n = 79$) were eligible for Free and Reduced-price Meals System (FARMS) services, and 13% ($n = 24$) were eligible for special education services in 2012–2013. Tables C1 and C2 (Appendix C) show the OPTG students by home school and course.

Table 1
Demographic Characteristics of Students Enrolled In At Least One
OPTG Course in 2012–2013 ($N = 186$)

	OPTG Students Enrolled in at Least One OPTG Course in 2012–2013	
	n	%
Grade Level		
Grade 9	(--)	(--)
Grade 10	13	7.0
Grade 11	25	13.4
Grade 12	147	79.0
Gender		
Female	89	47.8
Male	97	52.2
Race/Ethnicity		
American Indian or Alaskan Native	(--)	(--)
Asian	(--)	(--)
Black or African American	60	32.3
Hispanic/Latino	70	37.6
White	43	23.1
Two or More Races	(--)	(--)
Services		
ESOL	(--)	(--)
FARMS	79	42.5
Special Education	24	12.9

Note. To comply with federal requirements, results are not reported (--) for groups with fewer than 10 students enrolled.

As shown in Table 2, a majority (52%, $n = 96$) of the OPTG students enrolled for only one semester course, 20% ($n = 38$) enrolled for two semester courses, 15% ($n = 27$) enrolled for three semester courses, and 13% ($n = 25$) enrolled for four or more semester courses.

Table 2
Number of OPTG Semester Courses
Students Enrolled for in 2012–2013 ($N = 186$)

	n	%
Students Who Enrolled For One Course	96	51.6
Students Who Enrolled For Two Courses	38	20.4
Students Who Enrolled For Three Courses	27	14.5
Students Who Enrolled For Four or More Courses	25	13.4

2. How many OPTG students took and passed one or more of the required HSAs in 2012–2013?

Passing HSAs is a graduation requirement in Maryland and an indicator of the OPTG program success. Table 3 shows the number and percentage of OPTG students who took and passed the HSA exams in 2012–2013. For example, of 36 students who took the Algebra HSA exam during 2012–2013, 13 students (36%) passed the exam. The OPTG students who took the Biology HSA exam had the highest passing rate (61%, $n = 14$) compared to students who took HSAs in other content areas. Some OPTG students took more than one HSA in 2012–2013.

Table 3
Students Who Enrolled in 2012–2013 OPTG
Courses and Passed the HSA in 2012–2013

	OPTG Students Who Took HSA in 2012–2013	Passed Tested Subject in 2012–2013	
	N	n	%
Algebra	36	13	36.1
English	39	13	33.3
Biology	23	14	60.9

3. How many Grade 12 OPTG students graduated by June 2013?

Table 4 presents the graduation rates for Grade 12 OPTG students by student groups. Of 147 seniors, 99 graduated (67%) by the end of June 2013. A higher percentage of male students (72%, $n = 55$) graduated when compared with female students (62%, $n = 44$). Among ethnic groups, Hispanic/Latino students had the lowest graduation rate (50%, $n = 27$).

Table 4
Grade 12 Students Who Enrolled in OPTG Courses and Graduated by June 2013

	Grade 12 Students Who Enrolled	Grade 12 Students Who Graduated	
	N	n	%
All 12th Graders	147	99	67.3
Gender			
Female	71	44	62.0
Male	76	55	72.4
Race/Ethnicity			
American Indian or Alaskan Native	(--)	(--)	(--)
Asian	(--)	(--)	(--)
Black or African American	46	33	71.7
Hispanic/Latino	54	27	50.0
White	36	30	83.3
Two or More Races	(--)	(--)	(--)
Services			
ESOL	(--)	(--)	(--)
FARMS	59	38	64.4
Special Education	18	13	72.2

Note. To comply with federal requirements, results are not reported (--) for groups with fewer than 10 students enrolled.

4. How many OPTG students dropped out of school by June 2013?

Of all OPTG students (Table 5), 16 Grade 12 students dropped out by June 2013 (11%). Of the 18 dropouts, 10 were female students (11%).

Table 5
Grades 9–12 Students Who Enrolled in OPTG Courses and Dropped Out by June 2013

	Grades 9–12 Students Who Enrolled	Grades 9–12 Students Who Dropped Out	
	N	n	%
Total	186	18	9.7
Grade Level			
Grade 9	(--)	(--)	(--)
Grade 10	13	(--)	(--)
Grade 11	25	(--)	(--)
Grade 12	147	16	10.9
Gender			
Female	89	10	11.2
Male	97	(--)	(--)
Race/Ethnicity			
American Indian or Alaskan Native	(--)	(--)	(--)
Asian	(--)	(--)	(--)
Black or African American	60	(--)	(--)
Hispanic/Latino	70	(--)	(--)
White	43	(--)	(--)
Two or More Races	(--)	(--)	(--)
Services			
ESOL	(--)	(--)	(--)
FARMS	79	(--)	(--)
Special Education	24	(--)	(--)

Note. To comply with federal requirements, results are not reported (--) for groups with fewer than 10 students enrolled.

5. How did OPTG students perform in the OPTG courses they took?

Successful completion of an OPTG course was defined as earning a final grade of D or higher. Failing the course was not an option in this program. A student could withdraw from a enrolled course if he/she was not doing well in the course or never started the course work. If students did not complete the course by May 23, 2013, (deadline for course completion) and did not withdraw, they were identified as active (i.e., in progress). An active student could either withdraw formally or continue to finish the course in the next school year (2013–2014).

Since students took one or more OPTG courses, OPTG completion was calculated for students in each course. If a student took three courses, he/she was counted three times (once for each course). As shown in Table 6, the OPTG students enrolled in 394 courses. In this brief, a course refers to a student who enrolled for the course.

Among the 394 enrolled courses, 146 (37%) were completed, 207 (53%) were withdrawn from, and 41 (10%) remained active as of May 23, 2013. Of all subjects, English courses had the highest completion rate (46%, $n = 73$), while math courses had the lowest completion rate (27%, $n = 26$).

Even if a student enrolled for an OPTG course, it does not mean that the student actually participated in the course. There were 99 semester courses that students enrolled in, but spent zero minutes working on the course (Appendix D, Table D1). The 99 courses, however, were included in the total as shown in Tables 6 and 7.

Table 6
Courses Attempted and Completed in the Online Pathway to
Graduation Program by Subject in 2012–2013

| | Enrolled Courses | Status of OPTG Courses by the End of 2012–2013 | | | | | |
| | | Completed | | Withdrew | | Active* | |
	N	n	%	n	%	n	%
Total	394	146	37.1	207	52.5	41	10.4
English	160	73	45.6	74	46.3	13	8.1
Math	97	26	26.8	55	56.7	16	16.5
Science	78	26	33.3	46	59.0	(--)	(--)
Social Studies	59	21	35.6	32	54.2	(--)	(--)

Note. An active course means the course was not withdrawn from or completed by a student as of May 23, 2013. To comply with federal requirements, results are not reported (--) for groups with fewer than 10 students enrolled.

Table 7
Courses Attempted and Completed in the OPTG by Student Group in 2012–2013

| | Enrolled Courses | Status of OPTG Courses by the End of 2012–2013 | | | | | |
| | | Completed | | Withdrew | | Active* | |
	N	n	%	n	%	n	%
Total	394	146	37.1	207	52.5	41	10.4
Grade Level							
Grade 9	(--)	(--)	(--)	(--)	(--)	(--)	(--)
Grade 10	33	(--)	(--)	26	78.8	(--)	(--)
Grade 11	47	(--)	(--)	38	80.9	(--)	(--)
Grade 12	308	138	44.8	138	44.8	32	10.4
Gender							
Female	203	65	32.0	117	57.6	21	10.3
Male	191	81	42.4	90	47.1	20	10.5
Race/Ethnicity							
American Indian or Alaskan Native	(--)	(--)	(--)	(--)	(--)	(--)	(--)
Asian	13	10	76.9	(--)	(--)	(--)	(--)
Black or African American	137	51	37.2	72	52.6	14	10.2
Hispanic/Latino	152	41	27.0	86	56.6	25	16.4
White	85	42	49.4	41	48.2	(--)	(--)
Two or More Races	(--)	(--)	(--)	(--)	(--)	(--)	(--)
Services							
ESOL	(--)	(--)	(--)	(--)	(--)	(--)	(--)
FARMS	181	51	28.2	108	59.7	22	12.2
Special Education	41	10	24.4	24	58.5	(--)	(--)

Note. An active course means the course was not withdrawn from or completed by a student as of May 23, 2013. To comply with federal requirements, results are not reported (--) for groups with fewer than 10 students enrolled.

As shown in Table 7 above, Grade 12 students had the highest completion rate (45%, $n = 138$) compared to students in other grades. Male students completed at a higher rate (42%, $n = 81$) than female students (32%, $n = 65$). Hispanic/Latino students had the lowest completion rate (27%, $n = 41$) compared to other ethnic groups.

Content supervisors evaluated the Apex curriculum in terms of MCPS' curriculum and found Apex to have content and rigor differences. However, due to the need of this group of students, it was determined that credits for the Apex courses would be accepted for the appropriate MCPS courses. Among the online courses available, the Apex curriculum was found to align most closely with the Maryland voluntary state curriculum or the national standards. The materials provided in Apex include extensive readings, video segments, links to website resources, study guides, graphic organizers, assignments, virtual science labs, discussion boards, quizzes, unit tests, and final examinations. OPTG follows all MCPS grading and reporting policies, including opportunities for reassessment. Students have multiple opportunities to show mastery of content. Formative and summative assessments are provided for each instructional unit to measure mastery of the content. Students who score 65% or above on the assessments can proceed to the next unit. For all projects and writing assignments, a scoring rubric is provided to guide grading.

For 146 OPTG courses completed in 2012–2013 (Table 8), the average grade points earned on the completed assessments, including quizzes and unit tests was 75 with a minimum of 59 earned and a maximum of 96. This suggested that on average, a student earned 75 grade points out of 100 on completed assessments in order to be successful in the OPTG courses. Average grade points earned for completed assessments for the OPTG students who withdrew or were still in progress (active) are shown in Table D2 (Appendix D).

Table 8
Average Grade Points Earned on Completed Assessments Including Quizzes and
Unit Tests for Students Who Completed Online Pathway to Graduation
Courses in 2012–2013

		Grade Points Earned		
	n	Mean	Minimum	Maximum
Completed, all subjects	146	75	59	96
English	73	75	60	96
Mathematics	26	74	59	87
Science	26	77	60	94
Social Studies	21	73	60	89

6. *What were the staff experiences in the OPTG program?*

All four OPTG teachers completed the survey, yielding a response rate of 100%; however, they did not respond to all survey questions. Due to the small number of teachers surveyed, results are summarized from all respondents, and are reported in general categories.

a. **Procedures, computer knowledge, instruction material, course work, and support**

All teachers (100%) reported that students followed the procedures for participating in their OPTG courses and had the necessary computer knowledge to take an online course. All teachers

(100%) also agreed or strongly agreed that the OPTG online courses provided students sufficient reading materials and resources, and the amount of work for the OPTG online course was appropriate for students. All OPTG teachers (100%) agreed or strongly agreed that they received support from the OPTG site coordinator, received sufficient training on the web-based program, and enjoyed participating in the OPTG program. All teachers also indicated that they were able to e-mail from the online gradebook, to add others to receive e-mail updates, and to interact with students who came for help or to take a unit assessment. All teachers indicated that the flexibility allowing students to work at their own pace worked well in the OPTG program.

b. Instruction, assignments, strategies, and access to internet

Some teachers agreed with the following statement and others disagreed.
- OPTG students make use of online course materials such as diagnostic tests, lessons, assignments, activities, reading materials, and resources, etc. (3 of 4 agreed)
- OPTG students have reliable access to the Internet. (3 of 4 agreed)
- Students have made progress with the OPTG online course as expected. (3 of 4 agreed)
- OPTG students' performances meet my expectations. (3 of 4 agreed)
- The OPTG course material is well organized. (3 of 4 agreed)
- OPTG students make use of direct teacher instruction. (2 of 4 agreed)
- OPTG students complete assignments on time. (2 of 4 agreed)
- The OPTG course material is engaging for students. (2 of 4 agreed)
- The OPTG course unit tests match the content covered in the OPTG lessons. (2 of 4 agreed)
- Students apply strategies for successful completion of an OPTG course (e.g., don't put off work, ask for help if needed). (1 of 4 agreed)
- The level of difficulty of the OPTG course material is appropriate for students. (1 of 4 agreed)

The mixture of agreement and disagreement with statements about instruction, assignments, strategies, and internet access among staff means that teachers had different experiences depending on the course(s) they were teaching. Each of the four teachers in this program taught one or more courses in one subject (English, mathematics, science or social studies). The areas where there were levels of disagreement among teachers possibly reflected the differences in the subjects taught, the course curriculum, the students, or the instructor experience.

c. Methods used to monitor student progress

The top three methods teachers used to check student progress in an OPTG course included quizzes, unit tests, and feedback from students through e-mail or phone calls. All teachers (100%) indicated they work with students twice a week in the Center for Technology Innovation (CTI) lab and some shared they also were available to answer questions through e-mail. All teachers said they kept students informed of their progress either in person at CTI, through the online gradebook, or through e-mail. They also said they would e-mail students if they had not seen them at CTI for a week or two or could not see the student had logged on to their course. This was done in order to determine if a student needed help with their course material or course management.

d. How to improve student success

To improve student success with OPTG courses, teachers suggested requiring students to attend an initial session or two at CTI. The requirement could help students familiarize themselves with the structure of the program or provide some course timelines toward completion. Teachers also suggested school counselors be given access to OPTG courses to check on student progress, or a site overseer be provided at each individual high school who knows the students and could monitor their day-to-day progress in the OPTG courses and help determine when support may be needed.

7. *What were the student experiences in the OPTG program?*

Of 112 OPTG students actively enrolled in spring 2013 when the survey was sent, three students had a non-deliverable e-mail address. Only 20 OPTG students completed the survey resulting in a response rate of 18%. The 20 students did not provide responses to all survey items.

Of the 20 survey respondents, 65% of them said they had completed one or more courses this school year (2012–2013) and the rest were in progress. It is obvious the survey results were based on students who did not drop out of the OPTG program.

a. How and why enrolled in OPTG

A majority of student respondents (85%, $n = 17$ of 20) reported that they learned about the OPTG program from someone on the staff at their local high school (i.e., administrator, counselor, teacher). Also 94% of them indicated they agreed or strongly agreed that they received help from their high school counselor when selecting the best OPTG course ($n = 17$ of 18) (Appendix E, Table E1). Some students surveyed also indicated they learned about OPTG from a friend who had taken an OPTG course (25%, $n = 5$ of 20) or from the MCPS or school websites (15%, $n = 3$ of 20). Reasons chosen from the survey by the student respondents for enrolling in OPTG were:
- Need course to graduate from high school (95%, $n = 19$)
- Want to go to college (50%, $n = 10$)
- Convenience of online coursework (30%, $n = 6$)
- Earn a high school diploma for my parents (20%, $n = 4$)
- Graduate high school early (20%, $n = 4$)

b. Courses taken by student respondents

Nearly half (45%, $n = 9$ of 20) of the student respondents said they were taking or had completed English 12 (A or B) during the school year 2012–2013 (Table 9). Some respondents took more than one course.

Table 9
OPTG Courses Currently Being Taken or Completed During
School Year 2012–2013 as Reported by Student Survey Respondents ($N = 20$)

Course	n	$\%$
English 12 (A or B)	9	45.0
Algebra 2 (A or B)	5	25.0
Earth Science (A or B)	4	20.0
Modern World History (A or B)	3	15.0
Biology (A or B)	2	10.0
English 11 (A or B)	2	10.0
Geometry (A or B)	2	10.0
Algebra 1 (A or B)	1	5.0
English 9 (A or B)	1	5.0
Physical Science (A or B)	1	5.0
Precalculus (A or B)	1	5.0
U.S. History (A or B)	1	5.0

Note. Multiple response, students could provide more than one course they were taking or had completed in 2012–2013.

c. Past course enrollment

Of the 20 students responding to the survey, 9 (45%) said they had prior enrollment in a High School Plus class, 8 (40%) had enrolled in an MCPS summer school course, and 3 (15%) had enrolled in another OPTG course prior to the 2012–2013 school year. Overall, 14 respondents (70%) indicated they had enrolled in one or more of these programs, and 6 respondents (30%) had enrolled in two of the programs prior to 2012–2013.

d. Access online courses and assessments

About 65% of student respondents (13 of 20) worked at home on the OPTG course, while others worked at their home school (20%, $n = 4$) or at the CTI computer lab (15%, $n = 3$). All student respondents (100%) agreed or strongly agreed (Appendix E, Table E1) they:

- Have the necessary computer knowledge for taking an online course (18 of 18)
- Have reliable access to the Internet for this course (18 of 18)
- Can follow their OPTG course progress online (18 of 18)
- Can easily access online course content such as lessons, assignments, activities, reading materials and resources (19 of 19)
- Were able to manage their time to complete learning tasks for the OPTG course (19 of 19)
- Found the online coursework met their learning needs (19 of 19)
- Would recommend the OPTG program to other students (19 of 19)

A majority of student respondents reported they had taken at least one unit diagnostic test for an OPTG course (95%, $n = 19$ of 20). Over half of the respondents who had taken a unit diagnostic test (60%, $n = 12$ of 20) indicated they were able to move on or skip to the next unit.

e. Resources for the online courses

The top three resources named by student respondents that were used for their OPTG course were: 1) lessons and activities (84%, $n = 16$ of 19), 2) direct teacher instruction (79%, $n = 15$ of 19), and 3) study guides (74%, $n = 14$ of 19). Most respondents agreed or strongly agreed (Appendix E, Table E1) that:

- They have been supported and encouraged during the OPTG course by the OPTG staff (100%, $n = 19$ of 19).
- Direct teacher instruction for the OPTG course was available to them (90%, $n = 17$ of 19).

Three fourths (74%, $n = 14$ of 19) of respondents agreed or strongly agreed that OPTG course materials were interesting and kept their attention; however, 5 of 19 (26%) disagreed or strongly disagreed. A complete list of materials and resources is shown in Appendix F.

All student respondents to the survey indicated they communicated with their OPTG teacher as needed (19 of 19) and felt comfortable asking for help for the course (18 of 18). The majority of student respondents also reported (Appendix E, Table E1) that:

- They were able to work independently on the OPTG course with very little help from their teacher (95%, $n = 18$ of 19).
- They received teacher support for the OPTG course when needed (95%, $n = 17$ of 18).
- Their teacher comments or feedback were helpful and supported their course progress (89%, $n = 16$ of 18).
- Their teacher provided feedback on course assignments or questions within three working days (89%, $n = 16$ of 18).
- Their teacher discussed successful strategies for completing the OPTG course (79%, $n = 15$ of 19).

The lowest agreement rate was that 13 of 19 (68%) respondents agreed or strongly agreed with the statement "Getting to CTI to take quizzes and unit tests for the OPTG course is not a problem." This may suggest some students encountered issues when taking OPTG assessments due to travel or time. As one student commented, "I think that it [OPTG program] doesn't need improvements but it could probably help extending the hours or have the labs open Fridays." Another student suggested adding a teacher or a counselor at a school "that can be permitted to give you the tests at school if you're not able to make the trip to the CTI building cause of long distance, etc."

f. Areas of improvement

Ten out of 20 students (50%) named at least one area for improvement (Appendix E, Table E2). The areas for improvement included:
- Make some changes to Apex structure and software
- More or better advertisement of the OPTG program
- More teacher support
- Need more time at CTI
- Make an introduction page for the OPTC course so new students are not lost
- Provide accurate teacher contact information

Conclusions

The OPTG program offers an alternative learning opportunity across diverse groups of students and provides services for some at-risk students. The high graduation rate (67%) for 2012–2013 OPTG students indicates that the program met its goals to some extent by helping students who participated to earn course credits and graduate from high school.

However, the OPTG course completion rate was only 37% for all enrolled courses. Some students enrolled for a course but did not spend any time working on the course. The incompletion rate was as high as 63%. A low passing rate (33%) for students tested through HSA English in 2012–2013 suggests this is an area for improvement in the OPTG program.

Staff and student survey respondents identified areas of strength and improvement for the OPTG courses. Staff and students who completed the courses and responded to the survey reported some positive experiences. One of the major concerns by staff was how to support and monitor student progress so they could succeed in the courses. Students also indicated that more staff support was needed in order to improve the OPTG program.

According to a study by the U.S. Department of Education (2008), students taking courses online needed more immediate reassurances from a teacher or mentor to understand the instruction material. Their finding was aligned with the MCPS results described in this brief. Further analyses shows that some OPTG students waited a long time before they actually started accessing their enrolled courses. The delay or lack of frequent monitoring may be contributing factors toward the low course completion rate.

Limitations

The low response rate of the student survey is a great concern when interpreting survey results about student experiences in the program. For example, students who dropped out or did not engage in coursework were less likely to respond to the survey. Responses from the survey respondents may differ substantially from those of non-respondents, resulting in biased findings. In addition, OPTG courses under investigation in this study are of an independent and self-paced format. Since OPTG students were at various levels of enrollment toward high school completion, program staff were not always able to track whether, why, or when an enrolled student disengaged from the course, especially students who were not currently enrolled in an MCPS high school.

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Appendix A

**Background for Online Pathway to Graduation (OPTG) program in
Montgomery County Public Schools**[1]

Program History and Objectives

The Online Pathway to Graduation (OPTG) program in Montgomery County Public Schools (MCPS) is a year-long, extended-learning program for students to earn or recover credits toward high school graduation. The program was initially implemented during the 2009−2010 school year. The program complements the existing High School Plus and summer school programs. While these programs are available to currently enrolled students, the OPTG program also is available to former high school students who have dropped out in previous school years. The program offers a wide variety of subjects and courses needed by students in the target student population (MCPS, 2013). The two objectives of the program are: 1) to complete online courses required to achieve a high school diploma, and 2) to provide students with an alternative method to obtain high school credits.

Eligibility and Enrollment

Eligible participants of the OPTG program must meet all of the following requirements:
- Former high school students no longer enrolled in MCPS or current MCPS seniors who are enrolled in at least one class at his/her home school
- Three credits or fewer needed to graduate
- Already passed the Maryland High School Assessment (HSA) for any online HSA course needed; HSA related OPTG courses may be taken for credit recovery only and not for original credit
- Have not earned a General Equivalency Diploma (GED)
- Able to complete all graduation requirements prior to their 22nd birthday according to state regulation
- Private school students and others who have never attended an MCPS high school are not eligible to participate in this program

Former MCPS students who have dropped out of school before graduating are notified of this credit-bearing opportunity by an invitational letter sent to the last known address. Current seniors are informed by their local schools, through communication from principals or counselors to parents and students.

Students enrolled in the OPTG program may take one or more courses and must complete all coursework by a designated date at the end of the school year. An extension to the end of August was provided to those still in progress during 2012−2013. At the beginning of the course, participants fill out an agreement form about course selection and timeline for completing the course with assistance from an online content teacher or site coordinator. This action ensures that participants take the courses they need to earn a diploma. Participants are responsible for

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[1] The OPTG program background information was based on web and document review and staff interview.

completing all Maryland and MCPS graduation requirements, including HSAs and student service learning (SSL) requirements.

Program Fee

The cost to the OPTG participants is $310 for students not enrolled in an MCPS high school. MCPS students currently enrolled in an MCPS high school do not need to pay tuition. For this cost, participants might take up to 3 credits (or six semester courses with 0.5 credit for each course). Students must complete all coursework prior to a designated date (e.g. May 23, 2013 for 2012–2013 which was later extended to August 31, 2013). Students may qualify for reduced tuition.

Curriculum and Materials

The OPTG program offers a selected number of courses in English, mathematics, science, and social studies four days a week, with a rotational schedule for available content teachers. Two teachers (mathematics and English) are available at the Center for Technology Innovation (CT) on Monday and Wednesday and two teachers (science and social studies) are available at the CTI on Tuesday and Thursday. Table A1 provides a list of all available OPTG program courses in 2012–2013. Successful completion of each course earns the participant 0.5 credit each. Successful completion is defined as earning a final grade of D or above.

Table A1
Online Courses Provided by the OPTG Program in 2012-2013

English	Mathematics	Science	Social Studies
English 9A/B	Algebra 1A/ B	Earth Science A/ B	Modern World History A/ B
English 10A/B	Algebra 2A/ B	Physical Science A/B	U.S. History A/B
English 11A/B	Geometry A/B	Biology A/B	
English 12A/B	Precalculus A/B		

Content supervisors in the Office of Curriculum and Instructional Programs have evaluated Apex curriculum in terms of the MCPS' curriculum and expectations in order to determine alignment. The evaluation revealed significant differences in the content and rigor between the two curricula; however, due to the urgency of need for this particular group of students, credits for the Apex courses are accepted for the appropriate MCPS courses. It should be noted that among the few online programs that provide courses, the Apex courses may be more closely aligned with the Maryland voluntary state curriculum or the national standards and trends. They are structured differently but are more appropriate for online learning.

The materials provided in Apex include extensive readings, video segments, links to website resources, study guides, graphic organizers, assignments, virtual science labs, discussion boards, quizzes, unit tests, and final examinations. Participants may receive additional instruction and materials as needed.

Instruction Delivery and Assessments

The instruction for OPTG courses is delivered online, with the online content teacher or the site coordinator monitoring participants' progress and facilitating individual instruction in the CTI which is a centrally located computer classroom, or at the local school. Once enrolled, participants must attend an orientation session to review online course expectations and receive access codes.

The most straightforward benefit for the program is that participating students can take online lessons any time at any location with an Internet connection. If participants have a problem with computer access, they may go to the CTI to use computers four days a week. They may receive face-to-face instruction at the CTI, especially when they fall behind or fail a quiz; telephone support is also available on weekdays by Apex Learning. With support from an online content teacher, participants may work on and progress through all units in order and at their own pace, completing assignments and taking assessments to demonstrate mastery of course objectives. Participants may receive in-person lessons from a content teacher twice every week or seek support from staff in their local school.

OPTG participants may take quizzes without being supervised, with a maximum of two attempts to pass a quiz (65% or above). After two failed attempts, the student is locked out of the quiz. In order to unlock a quiz for a third attempt, students must demonstrate that they have gone back and reviewed the material for the quiz. After a third failed attempt, it is up to the online content teacher as to whether or not the student must go to the CTI for remediation and retake the quiz. Participants take diagnostics and unit/final assessments onsite at the CTI or their local school under supervision. In addition, students are responsible to complete assignments and make sure the assignments are submitted to the online content teacher.

Grading and Reporting

The OPTG follows all MCPS grading and reporting policies, including opportunities for reassessment. Students have multiple opportunities to show mastery of content. Formative and summative assessments are provided for each instructional unit to measure mastery of the content. Students who score 65% or above on the assessments can proceed to the next unit. For all projects and writing assignments, a scoring rubric is provided to guide grading.

Staff and Their Responsibilities

The online staff includes one coordinator and four teachers. Each teacher is designated for one content subject. The teachers keep student records. Online teaching focuses on monitoring, communication, and documentation. The content teacher guides students through the course, answers their questions about the course content, and grades their work. They are also available for students at the CTI two nights a week if students elect to attend sessions in person.

Appendix B

Literature Review

According to a report about K−12 online learning in certain school districts and states, some local districts found that a mix of face-to-face classes and online learning was proving effective because it played to students' strengths and weaknesses. Online learning opportunities provide students in difficult circumstances the opportunity to graduate (Edwards, 2010).

The U.S. Department of Education (USDE) released a report in 2008, "*Evaluating Online Learning: Challenges and Strategies for Success*." The report focused on rigorous evaluations of implementations and outcomes of seven exemplary online programs varying in both the type of program and the type of evaluation (USDE, 2008). The evaluations included a wide range of data collection and analysis activities such as surveys, interviews, observations, and scientific experiments that compared outcomes between online and traditional settings. The evaluations illustrated strong assessment practices and robust findings. Some findings or recommendations offered by the evaluators were:

- Online students needed to get more immediate reassurances from a teacher or mentor that they in fact were learning and understanding the material.
- A randomized controlled trial found that the online learning program had a significant effect on student learning only after teachers had gained experiences with the online learning tool.
- Online students needed help with pacing of learning, study skills, and troubleshooting computer-related technology in order to be successful in online learning.

The USDE released an in-depth meta-analysis of 45 online learning studies involving K−12 or older learners about the effectiveness of online learning (Means, Toyama, Murphy, Bakia, & Jones, 2010). The studies included in the meta-analysis used random-assignment or controlled quasi-experimental designs and examined effects only for objective measures of student learning. The overall results of the meta-analysis found that students in online learning conditions performed modestly better than those learning the same material through face-to-face instruction, with an average effect size of 0.20 favoring online conditions; the average effect size was larger for instruction that blended online and face-to-face elements than for purely online instruction, relative to purely face-to-face instruction. The meta-analysis also showed that effect sizes were larger for studies in which the online instruction was collaborative or instructor-directed than in those studies where online learners worked independently. Furthermore, the effectiveness of online learning was found broadly across different content and learner types.

In a brief overview of research on the effectiveness of K−12 online teaching and learning, Patrick and Powell (2009) concluded that online learning offered promising new models of K−12 education that were effective as an alternative learning condition across diverse groups of students. For example, meta-analysis by Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer (2004) found that online instruction led to student achievement that was as effective or better than, traditional face-to-face instruction. The Florida Tax Watch Center for Educational Performance and Accountability (2007) conducted a comprehensive assessment of the Florida Virtual School which included a high proportion of minority and underserved students. The study found that

students from the Florida Virtual School consistently outperformed their counterparts in Florida's traditional middle and high schools on standardized academic measures.

Although research has been conducted on the outcomes of online learning, little research was found on the direct impact that online learning has on high school graduation rates.

Appendix C

Table C1
Online Pathway to Graduation Students by Home School

School with OPTG Students	Students Enrolled for OPTG	
	n	%
Albert Einstein	(--)	(--)
Alternative Programs	(--)	(--)
Clarksburg	13	7.0
Col. Zadok Magruder	(--)	(--)
Damascus	(--)	(--)
Gaithersburg	18	9.7
Gateway to College Program	10	5.4
Home Instruction	(--)	(--)
James Hubert Blake	13	7.0
John F. Kennedy	15	8.1
Montgomery Blair	(--)	(--)
Northwest	(--)	(--)
Northwood	(--)	(--)
Paint Branch	(--)	(--)
Poolesville	(--)	(--)
Quince Orchard	(--)	(--)
Richard Montgomery	(--)	(--)
Rockville	12	6.5
Seneca Valley	10	5.4
Sherwood	(--)	(--)
Springbrook	(--)	(--)
Thomas S. Wootton	(--)	(--)
Walt Whitman	(--)	(--)
Walter Johnson	(--)	(--)
Watkins Mill	11	5.9
Wheaton	(--)	(--)
Winston Churchill	(--)	(--)
Not Currently in MCPS	(--)	(--)
Total	186	100.0

Note. To comply with federal requirements, results are not reported (--) for groups with fewer than 10 students enrolled.

Table C2
Online Pathway to Graduation Courses Enrolled
by Students in 2012–2013

OPTG Courses	Students Enrolled for the Course	
	n	%
Algebra I Core Semester 1 and 2	(--)	(--)
Algebra II Core Semester 1 and 2	60	15.3
American Literature Core Semester 1 and 2	34	8.6
British and World Literature Core Semester 1 and 2	104	26.4
Critical Reading and Effective Writing Core Semester 1 and 2	10	(--)
Earth Science Core Semester 1 and 2	32	8.1
Geometry Core Semester 1 and 2	20	5.1
Introduction to Literature and Composition Core Semester 1 and 2	12	(--)
Physical Science Core Semester 1 and 2	35	8.9
Precalculus Core Semester 1 and 2	13	(--)
U.S. History Core Semester 1 and 2	17	(--)
World History Core Semester 1	42	10.6
Total	394	100.0

Note. To comply with federal requirements, results are not reported (--) for groups with fewer than 10 students enrolled.

Appendix D

Table D1
Online Pathway to Graduation Courses Students Enrolled for
But Spent Zero Minutes Accessing in 2012–2013 by Student Group

	OPTG Courses Students Enrolled But Spent Zero Minutes Accessing in 2012–2013	
	n	%
Total	99	100.0
Content Subject		
English	33	33.3
Math	26	26.3
Science	24	24.2
Social Studies	16	16.2
Gender		
Female	66	66.7
Male	33	33.3
Race/Ethnicity		
American Indian or Alaskan Native	(--)	(--)
Asian	(--)	(--)
Black or African American	33	33.3
Hispanic/Latino	44	44.4
White	19	19.2
Two or More Races	(--)	(--)
Services		
ESOL	(--)	(--)
FARMS	53	53.5
Special Education	10	10.1

Note. (--) indicated data suppressed due to n < 10.

Table D2

Average Grade Points Earned on Completed Activities for Online Pathway to Graduation Courses by Enrollment Status in 2012–2013

	n	Grade Points Earned		
		Mean	Minimum	Maximum
Active*	41	65	0	92
English	13	66	0	80
Math	16	69	0	92
Science	(--)	57	0	79
Social Studies	(--)	61	0	85
Completed	146	75	59	96
English	73	75	60	96
Math	26	74	59	87
Science	26	77	60	94
Social Studies	21	73	60	89
Withdrew – Unpaid	207	24	0	91
English	74	22	0	90
Math	55	27	0	91
Science	46	21	0	80
Social Studies	32	26	0	88

Note. An active course means the course was not withdrawn from or completed by a student as of May 23, 2013. (--) indicated data suppressed due to n < 10.

Table E1

Percent of Agreement with Statements About OPTG Program by Students

Statement	Strongly Agree		Agree		Disagree		Strongly Disagree	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
I communicate with my OPTG teacher as needed. (*n* = 19)	17	89.5	2	10.5	0	0.0	0	0.0
I have the necessary computer knowledge for taking an online course. (*n* = 18)	16	88.9	2	11.1	0	0.0	0	0.0
I feel comfortable asking for help for the OPTG course. (*n* = 18)	16	88.9	2	11.1	0	0.0	0	0.0
I can follow my progress online for my OPTG course. (*n* = 18)	16	88.9	2	11.1	0	0.0	0	0.0
Teacher comments or feedback are helpful and support my course progress. (*n* = 18)	16	88.9	0	0.0	1	5.6	1	5.6
I can easily access online course content, such as lessons, assignments, activities, reading materials, and resources. (*n* = 19)	16	84.2	3	15.8	0	0.0	0	0.0
I have reliable access to the Internet for this course. (*n* = 18)	15	83.3	3	16.7	0	0.0	0	0.0
I am able to work independently on the OPTG course with very little help from my teacher. (*n* = 19)	15	78.9	3	15.8	1	5.3	0	0.0
I received sufficient instruction about my responsibilities for participating in an OPTG course. (*n* = 19)	15	78.9	3	15.8	0	0.0	1	5.3
I receive teacher support for the OPTG course when I need it. (*n* = 18)	14	77.8	3	16.7	1	5.6	0	0.0
I would recommend the OPTG program to other students. (*n* = 19)	14	73.7	5	26.3	0	0.0	0	0.0
I have been supported and encouraged during the OPTG course by the OPTG staff. (*n* = 19)	14	73.7	5	26.3	0	0.0	0	0.0
The online coursework meets my learning needs. (*n* = 19)	13	68.4	6	31.6	0	0.0	0	0.0
I received help from my high school counselor to select the best OPTG course for me. (*n* = 18)	12	66.7	5	27.8	1	5.6	0	0.0
My teacher provides feedback on my course assignments or questions within three working days. (*n* = 18)	12	66.7	4	22.2	1	5.6	1	5.6
I am able to manage my time to complete learning tasks for the OPTG course. (*n* = 19)	12	63.2	7	36.8	0	0.0	0	0.0
My teacher discussed successful strategies for completing the OPTG course with me. (*n* = 19)	12	63.2	3	15.8	4	21.1	0	0.0
Direct teacher instruction for the OPTG course is available to me. (*n* = 19)	11	57.9	6	31.6	2	10.5	0	0.0
Getting to CTI to take quizzes and unit tests for the OPTG course is not a problem. (*n* = 19)	10	52.6	3	15.8	4	21.1	2	10.5
OPTG materials are interesting and keep my attention. (*n* = 19)	9	47.4	5	26.3	4	21.1	1	5.3

Table E2

Student Suggestions to Improve the OPTG Program

Make some changes to Apex structure and software (3)

- It would be more convenient to skip around through the units, then to be stuck at something because a teacher needs to unlock something or you need help with something and have to wait until the next time you can see the teacher.
  The math practice sheets before you take the unit tests need to at least be relevant to what we're about to take on the test.
- Please make test accessible at home for students who have difficulty getting to the location as often as possible.
- Help with time management. I liked the fact that there weren't deadlines for each assignment or unit but it would be helpful if there was a suggested timeline or schedule to follow. I had trouble judging how much time each section would take to complete so I wasn't sure if I was falling behind or not.

More or better advertisement of program (2)

- If more students knew about it. I know girls who were exactly in my position, pregnant their senior year and they took so much time away from school to tend to the needs of their child and wound up getting held back. I think this is easier than attending school on a daily basis because I cannot afford child care for my daughter and by the time my mom or dad gets home from work I am able to have them babysit while I'm at CTI for about 2 hours. Sometimes I think this program was a heaven sent, as well as all the staff that have helped me through this experience.
- Advertising it better so students do not join too late.

More teacher support for program (2)

- An assistant for the teachers would greatly be needed. Being able to see the teacher more than twice a week would be incredible.
- A teacher associated with the program or a Counselor that can be permitted to give you the tests at school if you're not able to make the trip to the CTI building cause of long distance, etc.

Need more time at CTI (2)

- I think for us to have more in class time at the CTI building for one on one with teachers will help students more.
- I think that it doesn't need improvements but it could probably help extending the hours or have the labs open Fridays.

Other improvements (3)

- More food
- The English teacher's contact information isn't in the system... I don't have her email address
- Make an intro page so new students are not lost

Appendix F

Materials Being Used for the OPTG Courses (2012–2013)
($N = 20$)

Medium	n	%
Lessons and activities	16	84.2
Direct teacher instruction	15	78.9
Study guides	14	73.7
Optional diagnostic test	13	68.4
Reading material	9	47.4
Graphic organizers	7	36.8
Videos	6	31.6