Testing the Waters: An Analysis of the Student and Parent Experience in a Secondary School's First Blended Course Offering

Jason Paul Siko, Grand Valley State University

Abstract

In this study, the perceptions of parents (n = 14) and students (n = 47) enrolled in a blended learning course, the first of its kind at their school, were examined. Student performance in the blended and in the traditional portion of the course was examined, and the Educational Success Prediction Instrument (ESPRI) was administered to predict student performance. Both the students and parents were initially excited about the blended learning experience but were concerned about its effect on student performance. Teacher communication was a perceived concern. Differences in student performance between the two portions of the course were not statistically significant (p = .35). The ESPRI had correctly predicted approximately 84% of the outcomes (n = 43).

Résumé

Dans cette étude, on a examiné les perceptions des parents (n = 14) et des élèves (n = 47) inscrits à un cours d'apprentissage hybride, le premier de son genre à cette écolees. La performance de l'élève dans la partie hybride et dans la partie traditionnelle du cours a été examinée, et l'instrument de prédiction de la réussite scolaire (ESPRI) a été administré pour prédire la performance de l'élève. Tant les élèves que les parents ont tout d'abord été ravis de l'expérience d'apprentissage hybride, mais étaient préoccupés par son effet sur la performance de l'élève. La communication entre les enseignants a été une préoccupation perçue. Les différences dans la performance de l'étudiant entre les deux parties du cours ne sont pas statistiquement significatives (p = 0,35). L'instrument de prédiction de la réussite scolaire ESPRI avait correctement prédit environ 84 % des résultats (n = 43).

Introduction

In 2011, Watson, Murin, Vashaw, Gemin, and Rapp reported that blended learning, defined as a course which includes both online and face-to-face components, was the fastest growing segment of online learning at the K-12 level. Blended learning experiences for K-12 students provide opportunities for them to experience flexible learning environments, to build skills and confidence with information and communication technologies, and to develop higher-order thinking skills with respect to self-management (Parkes, Zaka, & Davis, 2011). A blended environment, however, can also be a challenge to students if they lack the ability to self-regulate and manage time. While a flexible schedule may appeal to K-12 students, they may not be successful if they cannot handle the autonomy of a flexible learning environment.

While various studies have compared online learning environments with more traditional face-to-face ones, they have not always examined the instructional strategies used in these settings and are, therefore, of limited value. At the same time, there are practical benefits to gathering data about student performance in new situations. In this paper, students' academic performance in an advanced biology course, offered as a blended learning course, and the perceptions of the students and their parents about this method of delivery are presented. Significantly, the course under consideration was the first blended learning course in any subject offered in this suburban mid-western United States secondary school. Discussion of the findings and recommendations for future research and implications for schools and prospective practitioners of blended learning are also provided.

LITERATURE REVIEW

Blended Learning Defined

There are numerous definitions of blended learning in the literature. The definition grounding this study is based on Staker's (2011) work in which blended learning is described as "…any time a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through online delivery with some element of student control over time, place, path, and/or pace" (p. 11). Parkes, Zaka, and Davis (2011), in their case study of a home economics course delivered in a blended format in New Zealand, have described the advantages and disadvantages of blended learning. Blended learning can provide opportunities for independent learning, increase student flexibility and choice, lead to opportunities for interaction, and enable increased engagement. It can also involve Internet problems in students' homes, challenges related to student readiness, and teachers' lack of skill in teaching in different media.

Student Perceptions of Blended Learning in K-12 Settings

Blended learning has been described as a potential game-changer for K-12 education (Christensen, Johnson, & Horn, 2008). Chandra and Fisher (2009), in a study surveying Australian students in blended secondary science classes, found that students were generally pleased with the experience. One problem associated with the delivery format was the response time of the online instructors. In other words, the students enjoyed the overall course layout but preferred the face-to-face setting for communication purposes. Geçer's (2013) study of fourth-grade students in Turkey mirrored these findings, as did Pratt and Trewern's (2011) study of blended experiences in rural New Zealand.

Roles and Responsibilities of Teachers and Parents in Blended Learning Courses

In blended learning, the roles of the teacher, course creator, and learning facilitator are either separated or held by one person. The time allotted to face-to-face and online interactions can vary as well. Finally, the role of the parent is not well-addressed in discussions of blended learning, which is important considering the additional work that the students must complete outside of the classroom.

One aspect that differentiates blended and online learning from face-to-face learning at the secondary and post-secondary level is the role of the parent. In blended and online learning settings, their role is difficult to define; although they are not instructors, tutors, facilitators, or troubleshooting experts, they must carry out each of these roles at some point (Hasler-Waters & Leong, 2011). Because of a potential lack of daily face-to-face interaction with the teacher, a parent may need to step in to help a child learn a new concept or install software.

Parental involvement plays a key role in the success of a virtual student (Black, 2009). According to Hoover-Dempsey and Sandler (2005), there are four behaviors that parents carry out to support their children: giving the student encouragement, reinforcing positive learning behaviors, modeling positive learning behaviors, and providing instruction when required. However, parents may be unaware of how to provide these supports if they are unfamiliar with blended instructional settings. This idea is supported by Zaka's (2013) case study that followed two principals, six teachers, and six students. Zaka noted that, while blended learning has the capacity to foster parental involvement, parental involvement could be a problem. Parents may lack knowledge about how the blended environment supports learning. In Zaka's study, some parents suggested that they viewed blended learning as game-like in nature. Zaka's recommendations are that schools should make a gradual transition to blended learning, offer clear explanations of the goals of a blended learning initiative, provide proper professional development for teachers, and ensure that teachers have choices about whether or not they wish to lead a blended course.

Student Performance and Online Readiness

In general, there is a lack of research regarding student performance and blended learning. In the world of online learning, much of the research suggests that online delivery methods are at least as effective as traditional methods. McLeod, Hughes, Brown, Choi, and Maeda (2005) have stated that some studies show that students perform better in online environments but these studies often do not take student attrition into account. Students who drop out of online courses are not figured into the comparisons and those students with failing grades are not factored into the performance comparison. Barbour and Reeves (2009) noted that online course design is often geared toward motivated, independent students with supportive families and access to appropriate workspaces and technologies. The authors have also pointed out that the profile of most online students does not align with how courses are designed.

In addition to these external factors, researchers have tried to identify characteristics that predispose students to being successful in an online course. Kim, Park, and Cozart (2013) conducted a study where students in online courses were asked why they thought they were successful. The results of this self-report survey that used a validated instrument demonstrated that the students believed that self-efficacy was important to success. However, if students had negative emotions related to achievement, the positive effects of their self-efficacy were negated. In addition, the reasons why a student signed up for an online course were important in student success. For example, a student electing to enroll in an online course in order to remain at grade level will experience a different set of emotions regarding success than other students, including high-achieving students enrolled in advanced courses not available at their school. The student enrolled in remedial courses has likely not been successful with the

content in the first place and, when this circumstance is combined with the potential for isolation and a lack of timely personal support from adults, the student's ability to persevere may be damaged and lead to frustration and anger.

Educational Success Prediction Instrument (ESPRI)

Student characteristics and success in online classes were the focus of the original ESPRI developed by Roblyer & Marshall, 2003. Nine areas of behavior were identified as important to success, including locus of control, internal and external motivation, self-esteem, responsibility, risk-taking, time management, goal setting, desire to succeed, and computer skills. Roblyer and Marshall's initial experiment with the 70-item ESPRI yielded a reliability of Cronbach's alpha .92, with the instrument correctly predicting the performance outcomes of almost 99% of 94 high school students enrolled in a virtual course.

In a follow-up study, Roblyer, Davis, Mills, Marshall, and Pape (2008) distributed an updated version (ESPRI-V2) of the survey to over 2,000 students enrolled in online courses. The new version of the instrument contained only 60 questions; questions from the first version that did not significantly contribute to the prediction index were eliminated. The second version of the instrument successfully predicted the outcomes of 79.3% participants with the same level of reliability (Cronbach's alpha = .92). While the success rate of the second survey was lower than the first, the authors noted that the capacity of the instrument to predict a passing score was much higher than for a failing score (93% versus 30%). Further, the authors found that only 25 items on the survey made significant contributions to the results.

Research Aims and Questions

While the two versions of ESPRI have been used as predictive instruments in online courses, no published literature exists on the tool's capacity to predict success in blended courses. Thus, the aim of this study was to see if the 25 questions from the ESPRI-V2 (i.e., the questions that made significant contributions to the predictive ability in the 2008 study by Roblyer et al.) could be used as an instrument to correctly predict student performance in a blended course. Further, while student perceptions of blended learning do appear in the research, little research regarding parents' perceptions could be found; as a result, parents' perceptions became a second focus of this particular study. The research questions informing the study were the following:

1. What are the perceptions of students in a blended learning course?
2. What are the perceptions of parents whose children are in a blended learning course?
3. Is there any difference in student performance between the traditional and blended portions of the course?
4. How well does the modified version of the ESPRI-V2 survey predict the performance of students in a blended course?

METHODS

Study Setting

The study took place in a large suburban high school in the mid-western United States. The school serves grades ten through twelve. In 2011-2012, the school population was approximately 1,900 students. At the time of the study, the school was on a trimester system, where one-credit courses were offered over two of the three trimesters during the academic year. Beginning in 2009, the school began offering the International Baccalaureate (IB) Diploma Programme, a rigorous two-year program beginning in grade 11 where cohorts of students enroll in courses in six content areas: primary language, secondary language, experimental science, arts, social studies, and mathematics. In addition, students are required to write an essay based on primary or secondary research they have conducted in one of the six areas, to participate in extracurricular activities, and to engage in community service projects. In order to earn the IB Diploma, students need to earn a minimum aggregate score on exams in their IB courses in addition to completing their essays and service work. The students in this study were the third cohort of IB students in the school, and they were in the first year of the program.

Preparation for Blended Learning Experiences

Consistent with the some of Zaka's (2013) recommendations, the school wanted to slowly introduce blended courses into its offerings. Further, the goals of this study were made clear to the parents and the students through informational meetings held before the blended portion of the course began. At these informational sessions, parents were told about the blended format, expectations, and how it would be beneficial for their children to become familiar with alternate instructional delivery methods before college. In other words, the exposure to a blended course in high school would help students make future decisions about taking online or blended courses in college (i.e., when tuition money is involved and support may be lacking).

Procedures

The IB Biology-Higher Level course examined in this study was offered for 4 trimesters over two years. The students (n = 47) in grade 11 were split between two sections of the course. During the first trimester the course covered the following topics: cells, biochemistry, photosynthesis, and cellular respiration. In the first trimester, both sections had the same instructor who delivered the course in a face-to-face format.

During the second trimester, students completed units on classical and molecular genetics, classification, evolution, and ecology delivered in a blended format. In the second trimester, the sections were offered during the same period, which necessitated assigning two instructors to the course (i.e., one for each section). The primary instructor who had taught the course since its inception was a doctoral student in instructional technology. This instructor was skilled in online and blended learning strategies and had teaching experience and scholarly publications in the field. He served as an informal

mentor to the second instructor, who had never taught the IB biology course nor had he taught in an online or blended format.

Requirements for attending class varied from week to week. On average, students were required to attend class two to three days per week. Mandatory attendance was required for examinations, labs, and review days, as well as on specific days when the instructor felt that a live lecture would be prudent. Announcements via email and the various Web 2.0 tools used in the course (e.g., Edmodo) informed the students when they needed to attend. On days when attendance was not required, the students could still come into the school to work on course assignments, do group work, and/or receive additional help.

Otherwise, on days where attendance was not required, students arrived one hour later than the rest of the school population, as the course was offered during the first hour of the school day. For attendance and pupil accounting purposes, students needed to be present for the final five minutes of the first period, at which time they were required to initial a sign-in sheet. This was also a time when the instructors could give announcements to the class.

The majority of the content was housed in the learning management system (Moodle, version 1.9). A typical unit included an agenda, assigned readings from textbooks, links to video lectures, assignment descriptions, and submission drop boxes. Online assignments included blog posts that utilized the Edublogs platform (http://edublogs.org) and discussions that utilized the social learning platform Edmodo (http://edmodo.com).

Students' grades were verified every two weeks by reviewing the grades in the online gradebook with the students. While students could come in any day for help, students whose grades were below 70% were required to attend school for remediation and to make up assignments. If, after two weeks, the student's grades rose above 70%, the student regained the privilege of flexible attendance.

Data Collection and Analysis

During the 2011-2012 school year, the experiences of students and parents as well as student performance in an advanced biology class offered using face-to-face and blended formats were examined. At the end of the second trimester of the course, students completed an online survey regarding their initial perceptions and experiences within the course. In addition, parents of the students were asked to complete an online survey exploring their initial perceptions of the course and their observations of their children's experiences when they were engaged in online activities outside of class. The survey questions were a mix of selected response (i.e., Likert-style, true/false, and multiple choice) and open-ended questions. Descriptive statistics were calculated for the survey questions. Responses to the open ended questions were analyzed using a constant comparative method (Strauss & Corbin, 1994).

In order to investigate the third research question, final grades, calculated as percentages, from each of the face-to-face and blended portions of the course were compared using a paired t-test. For the fourth research question, a modified version of the ESPRI-V2 (Roblyer et al., 2008) was administered to students at the beginning of the blended portion of the course. The modified version of the ESPRI-V2 included 25 questions that Roblyer and her colleagues determined to be the largest contributors to predicting success (see Appendix A for a copy of the survey). In addition, fewer items were used due to the sample size of students in the study. Hair, Black, Babin, Anderson, and Tatham (2006) have recommended that sample size should outnumber the number of factors by a ratio of 20:1; when this is not possible, conditions should be monitored carefully, and the number of factors should never be greater than the number in the sample. The responses were used in a multiple discriminate analysis to see if these items, taken together, could accurately predict whether students would pass or fail based on an average of 70% for the blended portion of the course.

RESULTS

Quantitative Findings

The first two research questions for this study focused on perceptions:

1. What are the perceptions of students in a blended learning course?
2. What are the perceptions of parents whose children are in a blended learning course?

Forty-seven students completed the student survey while fourteen parents completed the parent survey. Tables 1 through 8 summarize the student and parent responses to survey items. Table 1 presents the students' responses to Likert-style questions about how they felt about the course in general. For the descriptive statistics (i.e., mean and standard deviation), Strongly Agree was assigned a value of 5, and Strongly Disagree was assigned a value of 1.

Most students had high expectations for the course, felt they could handle the autonomy, and were generally pleased with their instructors. Most students reported that they did fall behind at some point, despite reporting that they logged into the learning management system on a consistent basis; 87% of students responded with Neutral, Agree, or Strongly Agree to the question about logging into Moodle.

As noted earlier, students were required to sign in during the last few minutes of the class for attendance purposes. The teachers suspected that, on more than a few occasions, students had friends initial the attendance sheet if they were late for school or were in danger of violating the school's attendance policy. Since the survey was anonymous, there were no ramifications for telling the truth. Six percent of the students indicated that, on at least one occasion, they had signed in other classmates.

Students were asked what time of day they would most often log on to Moodle. It had been hypothesized that students would work on the course during the actual class period, only from home. However, most of the students (79%) reported working on the course in the evening or late at night. No follow-up questions were asked regarding what students did during the time they would have been in class under traditional circumstances.

Table 1. Student Responses to Likert-style Questions

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	M	SD
Before the blended course began, I originally liked the idea of taking a blended (online/face-to-face) course.	26 (55%)	14 (30%)	7 (15%)	0	0	4.40	0.74
Before the blended course began, I thought I would do well in a blended course.	7 (15%)	30 (64%)	7 (15%)	2 (4%)	1 (2%)	3.85	0.81
As I look back on the trimester, there were times where I fell behind.	16 (34%)	26 (55%)	4 (9%)	1 (2%)	0	4.21	0.69
Before the blended course began, I felt I could handle the autonomy associated with taking a blended course.	13 (28%)	23 (49%)	10 (21%)	1 (2%)	0	4.02	0.77
I felt that the teacher(s) were available whenever I needed assistance	25 (53%)	14 (30%)	6 (13%)	1 (2%)	1 (2%)	4.28	0.99
I felt that the teacher's response time to questions posted online was sufficient.	24 (51%)	18 (38%)	3 (6%)	1 (2%)	1 (2%)	4.34	0.87
I did not struggle with learning material on my own.	4 (9%)	19 (40%)	15 (32%)	7 (15%)	2 (4%)	3.34	0.98
I logged onto Moodle on a consistent basis.	8 (17%)	16 (34%)	17 (36%)	6 (13%)	0	3.55	0.93

Table 2 summarizes the responses to questions asking students what they did when they encountered difficulty. Students could select more than one option. It was hypothesized that students would use communication methods supported by the school including Moodle and Edmodo). However, methods not supported by the school such as Facebook and Twitter were more heavily utilized.

Finally, students were asked whether they felt that their grades would vary between the face-to-face and blended portions of the course. The majority felt that their scores would be the same; other responses were equally distributed between better and worse.

Several of the Likert-style questions on the parent survey were similar to the questions on the student survey such as items dealing with initial thoughts about blended learning. While fewer parents (n = 14) responded than students, the parents' responses about initial feelings were similar to those of the students. This is shown in Table 3.

Table 2. Student Responses to Questions about Getting Help

	Help during class time	Moodle	Edmodo	Facebook / Twitter	Email Instructor	Email Classmates	I would not ask for help, even when struggling	Other
When you had a question about content, where were you likely to ask for help?	17 (36%)	8 (17%)	1 (2%)	23 (49%)	5 (11%)	24 (51%)	10 (21%)	13 (28%)
When you had a technical question, where were you likely to ask for help?	15 (32%)	4 (9%)	2 (4%)	19 (40%)	8 (17%)	21 (45%)	4 (9%)	7 (15%)

Parents were also asked questions about their perceptions of communication as well as invited to share any feedback they had received from their children regarding the experience. This information is summarized in Table 4. The majority of the parents felt that the lines of communication were clear, and that their children were able to handle the technological aspects of the blended course. About one-third of the parents responded that their children expressed frustration over the content.

Table 3. Parent Responses to Likert-style Questions

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	M	SD
I believed that my child had the self-discipline to work in a blended, autonomous environment.	8 (57%)	3 (21%)	1 (7%)	1 (7%)	1 (7%)	4.14	1.29
I was concerned that my child's grades would be affected by the new learning environment.	6 (43%)	1 (7%)	3 (21%)	0	4 (29%)	3.36	1.74
My child felt comfortable with the concept of having content being delivered outside of class?	9 (64%)	3 21%)	1 (7%)	1 (7%)	0	4.43	0.93

Table 4. Parent Responses to Yes/No Survey Questions

	Yes	No
Did you feel that there have been clear lines of communication between the teacher, student, and parent?	10 (71%)	4 (29%)
Did your child express any frustration with learning the content?	5 (36%)	9 (64%)
Did your child express any frustration with the technology?	2 (14%)	12 (86%)

Table 5 summarizes the results for parents and students regarding whether they would like to see the course continue in a blended format. In both instance, the majority hoped to see it continue as a blended course.

Table 5. Student and Parent Responses to Question about the Future of the Course

Next year, I hope that the class...	Remains a blended course	Reverts back to face-to-face
Parents	10 (71%)	4 (29%)
Students	30 (64%)	17 (36%)

The third research question examined student performance: Is there any difference in student performance between the traditional and blended portions of the course? To answer this research question, student grades expressed as percentages for the first and second half of the course offered in traditional and blended formats, respectively, were compared using a paired t-test. The results are summarized in Table 6.

Table 6. Comparison of Student Percentages Between the Traditional and Blended Portions of the Course

Group	$\underline{N}$	M	SD
Traditional	43	79.08	9.96
Blended	43	77.96	11.02

The mean of the scores in the traditional portion of the course was higher than for the blended portion of the course. However, the results of the paired t-test showed that the individual changes in scores between the two halves were not statistically significant, $t(42) = 0.95$; $p = .35$.

The fourth research question examined the predictive ability of the modified version of the ESPRI-V2: How well does the modified version of the ESPRI-V2 survey accurately predict the performance of students in a blended course? To answer this question, the 25 items from the ESPRI-V2 survey were loaded into a multiple discriminant equation. The Box's M test for homogeneity could not be run because the data set resulted in fewer than two nonsingular covariance matrices. Further, one of the questions showed no variance; every student responded with the same answer. As a result, the discriminant analysis was run with only eight of the 25 items. These eight items had the largest difference in group means although they still met the suggested tests for assumptions: Box's M test for homogeneity, Wilks' lambda, and Press's Q (Hair et al., 2006). The standardized discriminant equation was determined to be $ZD = -.233ZQ12 + .569ZQ21 + .523ZQ17 + .397ZQ16 - .551ZQ18 + .360ZQ22 -$

.250ZQ13 - .551ZQ3. Box's M was not statistically significant, F(36, 730.0) = 1.34, p = .09. Table 7 shows the results of the prediction regression.

Table 7. Classification Table from Discriminant Analysis

	Predicted Fail	Predicted Pass	Totals
Actual Fail	6 (66.7%)	3 (33.3%)	9
Actual Pass	4 (11.8%)	30 (88.2%)	34

Overall, the regression equation accurately predicted 83.7% of the 43 cases; in other words, 36 of the 43 cases were accurately predicted. Wilks' Lambda was equal to .656, and was determined to be statistically significant, $F(1,8) = 15.61$, $p = .048$. Press' Q statistic was determined to be statistically significant, $F(1,42) = 19.56$; $p < .01$.

Qualitative Findings

Several themes emerged from the responses to the open-ended questions completed by parents and students. The students were very excited by the opportunity to take a blended learning course, and the parents' responses confirmed their children's disposition. The students' positive attitudes seemed to focus on ability to sleep in and not needing to arrive school before 8 AM for most days. The parents were encouraged to see that their children would have the experience of online learning, given that most respondents stated that they would likely have to learn how to learn in this format in college. Despite this optimism, several parents expressed concern over their children's ability to handle the format. This notion of reserved optimism in the open-ended responses is supported by the responses in the selected-response questions found in Tables 1 and 3.

In addition to mentioning the flexibility of sleeping in, many students shared that they enjoyed the flexibility offered by the blended format. As opposed to being required to attend class every day, they liked that they could work at their own pace and spend as much time as needed on a topic based on their perceived difficulty of the material. However, many of the students did not like the fact that the course required a tremendous amount of self-regulation. Many of them admitted to falling behind in the course at one point or another. They shared this admission in the selected-response and open-ended questions. However, these students also identified this experience as a "…valuable lesson…" in time management.

When asked about what changes could be made to the course, many of the students requested more structure in one way or another. Students responded that they wanted not only more face-to-face sessions but also more homework assignments and short quizzes to assess their learning. Parents also remarked that their children could "get lazy" because of the blended format. Many students indicated that they wanted a more complete calendar, despite the fact that a calendar of due dates was provided online. Students complained about not knowing when they needed to be in class for mandatory face-to-face sessions.

Finally, parents and students had complaints about a lack of communication by teachers. Aside from daily updating of the calendar, the teachers sent emails to parents and students at least once per week. Several parents noted that they were unaware that their children were struggling despite the fact that the school had an online grading system that was updated regularly. The students, for the most part, expected no negative change in their grades, and the majority of parents and students hoped the course would continue in the same format the following year.

DISCUSSION

This study examined the performance of students in a course where one-half of the course was offered in a traditional format and the other half in a blended format. Comparison of student performance in the two portions of the course revealed that, as a whole, the students performed slightly better during the section of the course offered through traditional delivery methods. However, the difference between individual student performances (i.e., how each student performed in each portion of the course) was not determined to be statistically significant. While this study compared how each student performed in the two parts of the course, group scores were not compared. Nor was the study a quasi-experimental study where one class received instruction in one method and a second group experienced a different format. Therefore, the comparison of each student's scores may not be valid because of differences in content. The difficulty of the content in the two portions of the course may not have been equivalent. It is logical for courses to begin with easier content and to progress to more difficult content since curriculum builds from less complex to more complex ideas. Finally, from a research standpoint, Clark (1983) voiced his concerns about the usefulness of comparative media research when the underlying instructional strategies were primarily unchanged. However, from a practical standpoint, this finding went a long way in reassuring nervous students, parents, and administrators that this experience did not have negative effects on the students' and parents' post-secondary aspirations.

Concerning the modified ESPRI-V2 survey, the results of this study are similar to those reported in other studies involving the prediction of pass or failure in an online course (Roblyer et al., 2008; Roblyer & Marshall, 2003). In this study, approximately 90% of the students who passed the course had been predicted to be successful by the survey. However, as previously noted, this result may be suspect for several reasons. First, the design of the study was hampered by a low sample size compared to the number of variables in the survey. While the number of questions used in the discriminant analysis was initially reduced to 25 items, the discriminant analysis failed the test for homogeneity, and all 43 respondents answered one of the questions identically. Even with a reduction to eight items, the ratio of cases to variables is far from the recommended 20:1 ratio (Hair et al., 2006). However, the result of the Wilks' Lambda test was statistically significant, as was the Press' Q statistic which determines the level of confidence that the results are not by chance. Press' Q is sensitive to smaller sample sizes. In future studies, much larger samples are recommended to improve the validity of the results and to confirm that the assumptions needed for such a statistical test are met.

Finally, the themes that arose from the open-ended questions appeared to align with the quantitative data. That is, for the most part, students were successful in the course, and the students reported an overall positive experience. While there was anonymity in the data collection process, one might

assume that the students who expressed negative sentiments could be the students who did not perform well during the blended portion of the course. However, since individual grades did not change significantly between the blended and face-to-face portions of the course, the participants' responses may have been influenced more by difficulty with the content rather than the delivery medium.

In summary, the results of the qualitative and quantitative portions of this study were principally positive: students and parents were, in general, pleased with the experience. In addition, the data showed that student performance was similar in the two delivery formats. This finding suggests a satisfactory outcome for all stakeholders involved. Finally, despite various limitations, the modified version of the ESPRI-V2 demonstrated predictive capacity in this study of a blended course similar to predictive capacity in other studies involving online courses.

CONCLUSIONS AND IMPLICATIONS

In the study, the perceptions of students and parents as well as student performance in a blended course offered for the first time were examined. The predictive ability of the modified version of the ESPRI-V2 in a blended course was also considered. The outcomes were generally positive in that the course was well-received by both parents and students; the blended experience did not negatively affect student performance; and the predictive ability of the survey for blended learning was similar to its predictive ability for online courses.

Aside from the aforementioned problems with the statistical instruments used in the study, limitations in the perception-based portion of the study included sample size, particularly of the parents, in addition to the population and the students' demographic profile. Most of the students are from affluent households and, through their association with the IB program, are considered to be highly motivated. Because they fit Barbour and Reeves' (2009) description of the ideal online student—motivated, independent students with familial support and access to technology—the results cannot be generalized to the broader secondary school population. Further, other external factors examined in previous studies, such as access to technology and parental involvement, were not considered. Regarding the former, the students in the study came from homes where access to technology was not a problem. Every student had access to the Internet at home, and many had personal laptops for school.

Future research is recommended into how communication among parents, students, and teachers in blended courses can be improved. Difficulties with communication were the major complaint expressed by the stakeholders. In addition, future research into how to improve time management and self-regulation by students is recommended. Practitioners of blended learning should take note of these potential pitfalls when they design a blended experience and work to improve communication and time management. The development of support systems for students who enroll in blended courses but who score poorly on the ESPRI survey is likewise recommended. As Roblyer and her colleagues have mentioned (2008; 2003), the survey should not be used as a way to deter students from taking online courses; rather, it should be used to identify students who may have difficulty completing the course successfully. From a practitioner's standpoint (i.e., teachers, teacher educators, and school guidance

counselors), the survey can be used as a guidance tool. It has been shown again to be an accurate predictor of success in online, and, now, blended, courses.

The research on student and parent perceptions of blended learning is in its relative infancy. Because home schooling and virtual schooling alone cannot fulfill the entire demand for alternative methods of delivery (Staker, 2011), it is important that research into blended learning continue and inform practice. While this study is only one example of a blended learning environment, it does provides some clues about the perceptions of students and parents in relation to blended learning at the secondary school level. While parents and students were eager to participate in this experience, they had reservations about the students' ability to keep up. Both groups valued constant communication and had hoped for more of it. Therefore, stakeholders in K-12 education looking at blended learning as an option should strive to improve communication between all parties involved, as well as make sure those who are identified as potentially at-risk for failure be provided additional advising and support.

APPENDIX A

This survey is designed for high school students who are interested in online and/or blended learning courses. Please answer the following questions as accurately as you can.

DIRECTIONS: Put an "X" in the box corresponding to the number indicating how much you agree or disagree that the statement describes you. A "1" is Strongly Agree" and a "7" is "Strongly Disagree".

Technology Use/Self-Efficacy

	1	2	3	4	5	6	7
1. I know how to locate a document or a program on my computer.							
2. I know how to use a browser to locate Internet sites.							
3. I feel comfortable using a computer.							
4. I know how to use an Internet search engine to locate information.							
5. I have easy access to a computer with Internet capability.							
6. I have a computer in my home.							
7. I know how to send an attachment in an e-mail.							
8. I use e-mail or instant messaging at least once a week.							
9. I have good word processing skills.							
10. When I have to do something new on a computer, I usually try to figure it out myself.							

Achievement Beliefs

	1	2	3	4	5	6	7
11. Many times, I lose interest in attaining the goals I set.							
12. I rarely set goals for myself.							
13. I believe I am a high achiever.							

Suggested Citation: Siko, J. (2014). Testing the waters: An analysis of the student and parent experience in a secondary school's first blended course offering. *International Journal of E-Learning & Distance Education, 29*(2), 1-19. Available online at: http://ijede.ca/index.php/jde/article/view/882/1560

14. I find that I try harder if I set high goals for myself.							
15. I study hard for all of my classes because I enjoy acquiring new knowledge.							
16. I tend to persist at tasks until they are accomplished.							

Risk-Taking Beliefs

	1	2	3	4	5	6	7
17. I do not care what other people think of me if I make mistakes.							
18. I am not afraid of making mistakes if I am learning to do new things.							
19. I like taking chances and performing risky tasks in learning situations.							
20. If I am given a task to perform that I know little about, I don't mind taking a chance.							
21. When I am learning something new, it is okay if I make errors.							
22. I am afraid of failure if I take risks.							

Organization Beliefs

	1	2	3	4	5	6	7
23. I find it easier to study for an important test by breaking it into subparts rather than studying the whole subject matter at one time.							
24. I keep my notes on each subject together arranged in a logical order.							
25. I will often set short-term goals to help me reach a long-term goal.							

REFERENCES

Barbour, M.K., & Reeves, T.C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education, 52*(2), 402-416.

Black, E. W. (2009). *An evaluation of familial involvements' influence on student achievement in K–12 virtual schooling.* Unpublished Dissertation, University of Florida, Gainesville, FL.

Chandra, V., & Fisher, D. L. (2009). Students' perceptions of a blended web-based learning environment. *Learning Environments Research*, *12*(1), 31–44.

Christensen, C.M., Horn, M.B., & Johnson, C.W. (2008). *Disrupting class: How disruptive innovation will change the way the world learns.* New York: McGraw-Hill.

Clark, R.E. (1983). Reconsidering research on learning from media. *Review of Educational Research, 53*(4), 445-459.

Geçer, A. (2013). Lecturer-student communication in blended learning environments. *Educational Sciences: Theory & Practice*, *13*(1), 362–367.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., & Tatham, R.L. (2006). *Multivariate Data Analysis* (6th ed.). Upper Saddle River, NJ: Pearson.

Hasler-Waters, L., & Leong, P. (2011). New Roles for the Teacher and Learning Coach in Blended Learning for K-12. In *World Conference on Educational Multimedia, Hypermedia and Telecommunications* (Vol. 2011, No. 1, pp. 2716-2725).

Hoover-Dempsey, K., V., & Sandler, H. M. (2005). *Final performance report for OERI Grant #R305T010673: The social context of parental involvement: A path to enhanced achievement*: Institute of Educational Sciences, U.S. Department of Education.

Suggested Citation: Siko, J. (2014). Testing the waters: An analysis of the student and parent experience in a secondary school's first blended course offering. *International Journal of E-Learning & Distance Education, 29*(2), 1-19. Available online at: http://ijede.ca/index.php/jde/article/view/882/1560   17

Kim, C., Park, S., & Cozart, J. (2013). Affective and motivational factors of learning in online mathematics

      courses. *British Journal of Educational Technology*. doi: 10.1111/j.1467-8535.2012.01382.x

McLeod, S., Hughes, J.E., Brown, R., Choi, J., & Maeda, Y. (2005). *Algebra achievement in virtual and*

      traditional schools. Naperville, IL: Learning Point Associates.

Parkes, S., Zaka, P., & Davis, N. (2011). The first blended or hybrid online course in a New Zealand

      secondary school: A case study. *Computers in New Zealand Schools: Learning, Teaching,*

      Technology, 23(1), 1-30.

Pratt, K., & Trewern, A. (2011). New Zealand students' perceptions of blended learning. In *Society for*

      Information Technology & Teacher Education International Conference 2011 (Vol. 2011, pp. 663–

      668).

Roblyer, M.D., Davis, L., Mills, S.C., Marshall, J., & Pape, L. (2008). Toward practical procedures for

      predicting and promoting success in virtual school students. *The American Journal of Distance*

      Education, 22(2), 90-109.

Roblyer, M.D., & Marshall, J.C. (2003). Predicting success of virtual high school students: Preliminary

      results from an educational success prediction instrument. *Journal of Research on Technology in*

      Education, 35(2), 241-255.

Staker, H. (2011). *The rise of K-12 blended learning: Profiles of emerging models*. San Mateo, CA:

      Innosight Institute.

Strauss, A., & Corbin, J. (1994). Grounded theory methodology. *Handbook of qualitative research*, 273-

      285.

Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2011). *Keeping pace with K–12 online learning:*

      An annual review of policy and practice. Evergreen, CO: Evergreen Education Group.

Zaka, P. (2013). A case study of blended teaching and learning in a New Zealand secondary school, using

an ecological framework. *Journal of Open, Flexible and Distance Learning, 17*(1), 24-40.

Author

Jason Paul Siko is an Assistant Professor of Educational Technology at Grand Valley State University.
E-mail: sikojp@gmail.com

CNIE RCIÉ