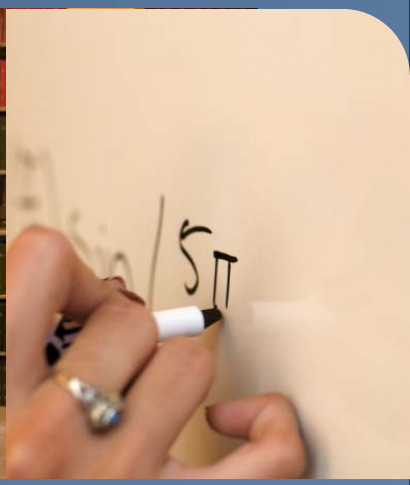
EARLY WARNING

Impact of Participating in Early Warning on Course Performance Winter 2012



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Undergraduate Education Institutional Research Report

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Executive Summary

- In winter 2012, 756 students in 7 courses were considered to be at-risk for failing their course.
- 32.2% of at-risk students attended a meeting with a Peer Educator.
- Students who attended a Peer Educator meeting had lower final grades than students who did not attend a Peer Educator meeting and did not use other ARC services.
    - Students in Biology 5A who attended a peer educator meeting had higher final grades than at-risk students who did not participate in Early Warning.
- 19.8% of at-risk students used other services in the Academic Resource Center instead of a PE meeting.
- Students who used other services at the ARC earned similar final course grades than students who did not participate in Early Warning.
    - Students in Chemistry 112B who used alternative ARC services instead of attending a Peer Educator meeting earned significantly higher grades than students not participating in Early Warning.

Introduction

Early warning (EW) programs, also referred to as early alert programs, have been defined as a "formal, proactive, feedback system through which students and student-support agents are alerted to early manifestations of poor academic performance (e.g., low in-progress grades) or academic disengagement (high rates of absenteeism)" (Cuseo, 2007). These programs identify students at risk of failing, provide students with early notification and in some cases provide additional services and support for at risk students.

The University of California, Riverside (UCR) Academic Resource Center (ARC) launched a pilot Early Warning program in the spring of 2008, serving two academic courses. The program has incrementally grown since then and provided EW support for twenty-two sections of ten courses in winter 2012. The UCR Early Warning program works in partnership with faculty members teaching courses with historically high D and F grades and large numbers of freshman students. Participating faculty agree to administer an early assessment exercise within the first three weeks of the course. Students who fall below a specified benchmark (a minimum score on the early assessment exercise set by the participating faculty member) are sent an e-mail from the professor notifying the student that s/he is at risk of failing the course. The Academic Resource Center then schedules appointments for these students to meet with Peer Educators who help students to identify the causes of their low performance and to develop action plans to improve their grades. Peer Educators provide students with resources and referrals to campus-based programs and services such as supplemental instruction, tutoring sessions, or time-management workshops. A description of the specific roles and responsibilities of faculty members, the Academic Resource Center, and Peer Educators in UCR's Early Warning (EW) program follows.

The Early Warning Program is part of UCR's commitment to helping students succeed.

Faculty Members

The Academic Resource Center invites faculty members to participate in EW, but faculty may express interest in program participation as well. Participation is voluntary in every case. The faculty member is asked to administer an early assessment within the first three weeks of the course and to set a benchmark, a minimum score that students must achieve in order to demonstrate that they understand the material. The early assessment can take the form of a homework assignment, quiz, or exam, and the grade is recorded by faculty in iGrade (a web-based grade submission system). Students who score below the benchmark are identified as at risk of failing the course.

Students that fell below the benchmark were sent an e-mail by their professor through iLearn (a web-based system that provides online access to class materials) notifying them of their at-risk status. Faculty members are provided with an email template and asked to encourage students to attend an appointment with a Peer Educator in the Academic Resource Center. Faculty can choose to write their own email or alter the template. In most cases, faculty chose to send the template as follows:

> Dear [Class] student,
>
> Hello. You are receiving this message because you received a low score on your recent [quiz/exam/assignment], and as your professor I am deeply concerned about your ability to do well in this class.
>
> For that reason, I would like you to meet with an Early Warning Peer Educator at the Academic Resource Center to discuss your situation and obtain assistance. Sometime in the next few weeks, you will be receiving another e-mail message specifying the date and time of your appointment.
>
> I also urge you to take advantage of other services available to you, including my office hours and your TA's office hours.
>
> Thank you for your attention to this message.
> Sincerely,
> [Professor Name]

The above email let students know that somebody cared about their success in a course they were struggling with and provided them with resources to help them pass their course. While the email does not state that students can go to the Academic Resource Center (ARC) for additional services, it is possible that some students may have used alternative services provided by the ARC along with or instead of their PE appointment. This possibility will be examined later.

Peer Educators

Peer Educators (PE) are selected by the ARC and sometimes in consultation with faculty. Students selected as Peer Educators must have at least a 3.0 grade point average and have earned at least a B+ in the course s/he is assigned to support for EW. Peer Educators are expected to attend the course s/he is assigned so as to be familiar with the course-specific content and

assignments. When a Peer Educator is unable to attend a lecture, s/he is asked to attend a discussion section.

Peer Educators help students identify the factors that caused them to perform below the benchmark, and develop action plans to help students improve. The Peer Educator provides students with a listing of the professor's and teaching assistant's office hours, resources such as tutoring and Supplemental Instruction (if they are offered for that course), and referral to campus-based programs and services. At times, Peer Educators may provide direct academic tutoring and may schedule follow-up appointments with the student.

Academic Resource Center Staff

Once the early assessment was graded and recorded in iGrade, the Academic Resource Center staff scheduled PE appointments for the students who scored below the minimum benchmark. Due to the large number of students at risk, it took program staff weeks to schedule and provide appointments to the entire at-risk population. Students were randomly assigned a number used to determine the order appointments would be assigned. Early Warning staff used this list to contact students for Peer Educator appointments starting with the student who was randomly assigned the number one, and working through the list in an attempt to provide all students with an appointment. EW staff automatically schedule PE appointments for as many at-risk students as possible. Appointments were not made for students whose schedules do not match well with PE schedules or if there are no more available meeting slots.

Staff consulted students' academic schedules to find out when they were potentially available for appointments. A special effort was made to select a time when a student was likely to attend a scheduled meeting. The ARC sent students an e-mail with their scheduled appointment and asked students to respond with a confirmation, request to reschedule, or to decline the appointment. ARC staff made a concerted effort to schedule appointments for all students but the size of classes and availability of students did not allow for every at-risk student to receive an appointment this past fall.

Once emails are sent, ARC staff attempt to contact students on the phone. In most cases, students had not updated university records with their current phone number and ARC staff was not able to contact them. Reminder emails were sent by PEs to students a couple days before their scheduled appointment to help ensure students would attend their scheduled meeting. If students did not confirm their scheduled appointment at least 24 hours prior, their appointment was automatically canceled.

Methodology

Evaluation of the EW program is designed to help faculty, staff and administrators better understand the impact of participation in early warning on course performance. The ultimate goal is to provide information which helps to improve the early warning program. This evaluation is organized along two research questions.

1. What types of services and recommendations are provided to students during the Peer Educator appointments?

2. What was the impact of participating in the Early Warning program on course performance?
    a. Does meeting with a Peer Educator impact course performance?
    b. Does the use of ARC services impact course performance?

The EW Evaluation Design (Appendix A) provides a visual representation of the steps involved in evaluating the program's impact on course performance.

Sample and Data Sources

Data were collected for the winter 2012 Early Warning evaluation using iGrade, AccuTrack, and student enrollment information. After faculty members input the early assessment task grades on iGrade, we gathered student identification numbers for students who earned a low score on the early assessment and were identified as at risk. We recorded students' participation in the Early Warning program using an AccuTrack system. The Academic Resource Center (ARC) uses AccuTrack to monitor student usage of a variety of ARC programs. Students are required to sign in using AccuTrack when they meet with a Peer Educator or use other ARC services such as supplemental instruction, tutoring, or the computer lab. Course grades and student demographic characteristics were obtained through student enrollment and information system data provided by UCR.

In winter 2012, eleven faculty members were selected to participate in EW. There were 2,405 students enrolled in the 7 courses and 11 sections participating in the program. Table 1 displays the number of at-risk students by class, the number of appointments given to at-risk students, and the number of PE appointments at-risk students attended. In winter 2012, 756 students (31.4%) were identified as at risk following the early assessment exercise. Due to the amount of students identified as at-risk and the limited number of time slots available for PE appointments, 718 students (95.0%) received an email with an appointment time. Over the course of the winter quarter, 244 of those appointments (34.0%) were kept by students. The population in the study consisted of the following:

- Treatment Group: 244 students who attended an Early Warning Peer Educator appointment

- Control Group: 363 students who did not attend an Early Warning Peer Educator appointment and did not use any alternative ARC services.[1]

[1] All students who are at-risk receive an email notifying them of their at-risk status even though all students are not given PE appointments via email. Students not given an appointment can still utilize other ARC services and are therefore excluded from the control group.

Question 1: What common services were provided to students during Peer Educator appointments?

As part of the Early Warning PE meeting with the student, the PE completed an *Early Warning Program Meeting Report* that detailed the student's trouble with the course. Peer Educators then developed an *Early Warning Action Plan* to provide students with recommendations and referral to various services offered on campus for further assistance. Together, these forms outlined:

- Students' self-reported reason for poor performance
- Assistance provided at the time of the meeting
- Recommendations for outside assistance
- Recommendations for personal action

Findings from these reports are tabulated in Tables 2 and 3. A summary of the ARC services students used can be found in Tables 4 and 5.

Question 2: What was the impact of participating in the Early Warning program on course performance?

For purposes of program evaluation, we invoked a quasi-experimental analysis that compared the course grades of students who were identified at risk and attended a Peer Educator Early Warning appointment (treatment) with the course grades of non-participating students who were also identified as at risk (control). The analysis begins with a comparison of average final course grades for the treatment and control groups (Table 6), then examines the difference in average final course grades for students who used ARC services instead of a PE meeting (Table 7), and compares final average course grades for students who attended a PE meeting and/or used ARC services (Table 8) to at-risk students who did not attend a PE meeting and did not use alternative ARC services.

Results

Table 1 displays the number of at-risk students per class and the participation rates for Early Warning appointments. The courses participating in EW for winter 2012 were: Anthropology 1; Biology 5A; Chemistry 112B; Math 4 sections 1, 10, and 20; Math 8A sections 1, 10, and 20; Physics 40A, and Psychology 2. During winter 2012, 756 students (31.4%) of the 2,405 students enrolled in seven courses participating in EW were identified as at risk. A total of 718 students (95.0%)[2] were provided with an EW appointment. Of this population, 244 (34.0%) attended an appointment with a Peer Educator. Participation in Early Warning (attending a PE meeting) varied immensely by course. Three sections of participating courses had 50% or more of their

[2] This represents a positive increase from the previous years when on average roughly sixty-five percent of the population was provided with an EW appointment.

students attend PE appointments. Attendance rates differed a lot between Math sections. Math 4, sections 10 and 20 had the lowest attendance rate (16.7%) while Math 8A, section 1 had the highest attendance rate (54.4%) out of all of the Math courses. It should be noted that some of the at-risk groups in Math courses are relatively small with half of the sections recommending less than 15 at-risk students to the program.

Faculty members participating in Early Warning are instructed to recommend students to the program who are at risk of failing their course based on an early assessment exercise. Faculty can choose the exercise and can select the cut-off used to determine if students are at-risk. Figure 1 displays the maximum grade students can earn and still be recommended to Early Warning. It also displays the average grade on the early assessment activity for at-risk students in that course. These scores are standardized by converting the raw score on each assessment to a percentage. There was a wide range of grade thresholds used to recommend students to EW. Three of the courses chose to recommend students who failed the early assessment activity (below 59%). Physics 40A and Anthropology 1 referred students who earned grades in the C-range or lower on the early assessment while the remaining majority of courses recommended students who earned grades in the D-range or lower. The average score on the early assessment activity for all of the courses except for Psychology 2 was in the F-range. The average score for at-risk students in Psychology 2 was a D-.

Early Warning is designed to alert students that they are at risk of failing a course. As mentioned earlier, students were emailed by their professor as early as week 3 of the 10-week quarter to alert them of their at-risk status and to urge them to attend a meeting with a Peer Educator. Due to the large group of at-risk students, it does take a while for students to be contacted and scheduled for appointments. Figure 2 shows when students received their initial contact email by their professor, what week students typically attended Peer Educator appointments, and what week students typically used alternative ARC services. The first emails were sent to students during week 3 (4.9%). Emails to a majority of students were sent during week 4 (75.3%). The remaining 20% of emails were sent during weeks 5 and 6. Students attended Peer Educator appointments beginning in week 4. Only 2% of students attended a PE meeting in week 4, just before mid-term exams. Approximately one-third of at-risk students attended Peer Educator meetings during mid-terms around weeks 5 and 6. The remaining 60% of our at-risk students attended PE meetings after mid-terms in weeks 7-10. It is unclear if the timing of PE appointments is due to scheduling issues, student motivation, or both. PE appointments are scheduled ahead of time by ARC staff but it is the responsibility of the student to accept the appointment time, decline the appointment, or reschedule.

The initial email by one's professor mentions the Academic Resource Center. Some students electing not to participate in a PE meeting chose to use some of the other services offered by the ARC. Figure 2 also displays when students used their first ARC service. Almost half of our at-risk students who used the ARC attended during week 1 or 2 of the quarter before they were categorized as at-risk in their course. The remaining half of at-risk students first used the ARC after they received an e-mail from their professor alerting them to their at-risk status or after attending a PE meeting. Before discussing the use of other ARC services, the details of PE appointments are outlined below.

Question 1: What common services were provided to students during Peer Educator appointments?

Peer Educators completed both an intake form and action plan. The intake form captured the reasons the "at-risk" student had academic difficulty in their course. The PE used this information to provide assistance to the student at risk based on their need. Furthermore, the PE also filled out an action plan for each student who attended an EW appointment. This action plan listed campus resources the at-risk student could use to obtain additional help with academic performance in their course.

Table 2 provides an overview of the Early Program Meeting Reports that Peer Educators completed after each appointment. Intake forms highlighted the reason students gave to explain why they scored below the benchmark and reported the assistance provided during the appointment. Peer Educators were instructed to check all applicable factors identified as a reason for poor performance for each student. The four main factors students gave for their poor performance in the course were: academic issues, study habits, personal issues, and/or the student felt s/he did not need help. Almost 60% of students noted academic issues as the reason s/he scored below the benchmark on his/her course assessment. Most students said they had problems with the course content (35.5%) followed by not being prepared to meet course demands (16.5%). Just over 80% of students indicated that they had study habit issues. Students reported struggling with poor time management (42.7%) followed by procrastination (37.1%), not obtaining the book or reading the text (19.8%), and other study habit issues (25.0%). Approximately 14% of students indicated some form of personal issue as the reason for their poor performance. Finally, only 4% of participants did not feel they needed help. In response to these issues, Peer Educators reviewed course content and/or course homework with the student (42.9%), gave the student a handout on study skills (79.6%), and/or provided the student with advice about their personal issues (10.9%).

Table 3 provides an overview of the *Early Warning Action Plan* which provides at-risk students with a list of referrals to campus resources and recommendations for personal changes to help students improve their performance in the course. Peer Educators were instructed to mark all applicable resources and recommendations made to students. The most common referrals were to visit their professor's and/or teaching assistant's office hours (64.2% and 70.1% respectively) followed by attending tutoring and/or Supplemental Instruction if available for the course (68.5% and 44.4%). Supplemental Instruction was available for Biology 5A, Chemistry 112B, Math 4, Math 8A, and Physics 40A in winter 2012. Additionally, PEs also recommended that at-risk students attend a study skills workshop, visit the Career Center, or speak with their advisor. These recommendations were much less common in comparison to recommending that students meet with their instructor or TA.

Peer Educators also recommended changes to students' personal study habits to improve their course performance. Peer Educators recommended that students review lecture notes (67.2%), do homework and/or practice problems (53.0%), study more effectively (42.8%), and improve time management (40.0%) most often. PEs also recommended that students study with classmates, obtain and read their textbook, and attend lecture and discussion.

After students completed their PE appointment, they were asked to rate the helpfulness of the PE meeting on a five-point scale from "Not at all helpful" to "Very helpful." Only 133 students chose to fill out the survey. Figure 3 displays the helpfulness ratings of students. Overall, students found PE appointments to be very helpful (75.2%) while about 5% found the meeting to be somewhat helpful. These findings suggest that students find these meetings beneficial.

While getting students to attend a PE meeting is the focus of the EW program, some students choose to utilize ARC services outside of the PE meeting or in addition to the PE meeting. Table 4 summarizes the use of ARC services and/or PE meetings by our at-risk group. While 244 students (32.3%) attended a PE meeting, 393 of 756 (52.0%) at-risk students used the ARC for either a PE meeting or other services in winter 2012. Of the 393 students using the ARC or attending a PE meeting, 205 (52.2%) received an email before they used the ARC or attended a PE meeting.[3] Almost 40% of at-risk students used the ARC instead of attending a PE meeting. Another one-third of at-risk students attended a PE meeting but did not use additional ARC services. The final 29% attended a PE meeting and used additional ARC services. Of the 115 students who attended a PE meeting and used additional ARC services, 31 (27.0%) attended a PE meeting before using additional services.

Table 5 summarizes the types of ARC services students used. Percentages are provided out of the entire at-risk population and out of the 393 students who attended a PE meeting and/or used other ARC services. Students could attend tutoring sessions, engage in peer counseling, attend various study workshops, attend supplemental instruction if available for their course, attend tutoring at Pentland dorm, attend a Peer Educator meeting, and/or attend an additional Peer Educator meeting. Most students attended a PE meeting (61.2%), attended Supplemental Instruction (48.6%), or attended Tutoring sessions (21.6%). At-risk students used a variety of ARC services over the winter 2012 quarter. The following section examines whether attending a PE meeting, using ARC only, or a combination of both affects a student's final grade in their course.

Question 2: What was the impact of participating in the Early Warning program on course performance?

T-tests were used to test for significant differences between average final course grades. Table 6 compares the average final course grades of the at-risk students who attended an EW appointment to the at-risk students who did not attend an EW appointment and did not use ARC services. The average final course grades did significantly differ between at-risk students who attended a PE meeting and those who did not attend a PE meeting. The average final grade for at-risk students attending a PE meeting is 1.85 while the average final grade for at-risk students that did not attend a PE meeting is 2.15. While students' final course grades who attended a PE meeting are lower than students who did not use the ARC, this does not mean that PE meetings have a negative effect on students' final grades. I both cases, these grades are in the C to C-minus range and are considered passing for most courses.

[3] Only 262 students in the at-risk group who used services received an email from their professor.

When examining the average final course grades by class, we find significant differences for Biology 5A. At-risk students who attended PE meetings earned a D+ while students who did not attend a PE meeting earned an average final grade of a D. Students must earn a C- or better in Biology 5A in order to take Biology 5B. All of the students in Biology 5A who attended a PE meeting also used other ARC services. In most of the classes that participated in EW, we see no significant final course grade difference between students meeting with Peer Educators and those not meeting with Peer Educators or using other ARC services.

Some at-risk students used other ARC services instead of attending a PE meeting (see Table 4). We examined final course grade differences between students who used other ARC services and students who did not participate in EW (did not attend a PE meeting and did not use ARC services). Overall, the final average course grades do not significantly differ between students using alternative ARC services (no PE meeting) and students who did not participate in EW. Students who used ARC services earned an average final course grade of 2.00 (C) while students who did not participate in EW earned an average final course grade of 2.15 (C). Only Chemistry 112B showed significant differences in average final course grades between ARC service users and students who did not participate in EW. Students who used ARC services without a PE meeting in Chemistry 112B earned a final average grade of 2.02 (C) compared to students who did not use the ARC or attend a meeting who earned an average final grade of 1.38 (D+). This is a 2-grade difference between students attending alternative ARC services and those not participating in EW.

Finally, we compared students who attended a PE meeting and/or used ARC services to students who did not attend a PE meeting and who did not use ARC services. The findings are displayed in Table 8. While the overall course grade differences show that students who used EW services earned an average grade of 1.90 (C-) and non-participants earned an average of 2.15 (C), these are not significantly different. This suggests that these services do little to benefit at-risk students. We do see significant differences in final grades between EW participants and non-participants in Psychology 2. Psychology 2 students who participated in EW earned an average grade of 2.45 (C+) while their non-participating counterparts earned an average grade of 2.20 (C).

Discussion

Question 1: What common services were provided to students during Peer Educator appointments?

Since the inception of the Early Warning Program, the Academic Resource Center has made a concerted effort to improve the program. ARC attempts to provide Peer Educator appointments to nearly every student who is identified as at risk and to implement innovations and to increase the participation rate of students who attend Peer Educator appointments. Of the students who were provided with a Peer Educator appointment, 34.0% of those at-risk students attended their

appointment. For ease of comparison, 32.3% (244) of the population (756) of at-risk students attended a PE meeting. An additional 19.8% (150) of at-risk students chose to utilize alternative ARC services instead of attending a PE appointment. In all, 52.0% of students identified as at-risk used at least one ARC service or attended a PE appointment. This suggests that further incentives are necessary to increase participation in the program.

Results from the Early Warning Meeting Report (intake form) show that poor study habits and academic issues were the leading reasons for not doing well on the first assessment. As a result, PEs provided almost 80% of students with coaching on study skills and handouts on time management, test preparation, and note taking. Just over 40% of students received assistance with course content and/or homework from their Peer Educator during their appointment.

Peer Educators also completed an action plan which offered a list of campus resources that students were referred to for continued assistance with both academic and personal issues. The most common recommendation for at-risk students was to visit their professor's and/or TAs office hours. This was followed by referral to tutoring and Supplemental Instruction (if available for the course). Students were also advised to take more personal action regarding their academic performance by doing their homework or practice problems, reviewing lecture notes, and studying more effectively. The results of the PE meetings have been consistent over the past two years of the program suggesting that our at-risk students share common issues and are given the same or similar advice each year.

Question 2: What was the impact of participating in the Early Warning program on course performance?

Our examination of average incoming scores on the early assessment activities in courses suggests that students entered the program at very different places in their class. A few courses recommend only failing students to the program while other recommend students earning grades in the C-range to the program. After students were identified as at-risk, they received an email from their professor telling them they were at risk for failing the course and urging them to attend a PE meeting. These emails were sent in some classes during week 3 but most of the emails were sent during week 4, around mid-term exams. E-mails were sent as late as week 6 to some at-risk students. Most of peer educator appointments took place during weeks 6 through 8 of the quarter. A few were attended during weeks 9 and 10, after mid-term exams have concluded in most courses on campus. Most students who chose to use ARC services visited the facility for the first time early in the quarter before week 5. In order for services and PE meetings to be successful, it would likely be more beneficial for students to visit the ARC earlier in the quarter allowing them ample time to make the changes necessary to be successful in their courses.

Results show that the population of at-risk students participating in EW had significantly lower final grades compared to their non-participating at-risk counterparts. Students who attended a PE meeting in Biology 5A earned significantly higher grades than students who did not attend a PE meeting or use ARC services. All of the students who attended a PE meeting in Biology 5A also used alternative ARC services. Students who used ARC services without a PE meeting did not earn significantly different average final course grades than students who did not use ARC services and did not attend a PE meeting. Students in Chemistry 112B who used only

alternative ARC services showed a significant increase in their final course grade compared to non-participants in their course. Lastly, students in Psychology 2 who used ARC services and/or attended a PE meeting showed significantly higher final course grades than non-EW participants. While EW had an impact on students in some courses, it did not affect the final course grades of student participants in other courses causing us to question the ability of the program to significantly affect final course grades. The average final course grades for EW participants are generally in the C or D range. It is possible students learn valuable study skills and strategies to help them succeed in their future coursework even if it does not affect their grade in one course.

Conclusion

On average, the EW program showed no impact on course performance for winter 2012 courses. Early warning participation did increase the final course grades of students in Biology 5A, Chemistry 112B, and Psychology 2 in some circumstances compared to non-participants. While students may not have experienced an increase in their final course grade compared to their at-risk peers for meeting with a Peer Educator, about 95% of students attending meetings found them helpful or very helpful.

While identifying at-risk students early in the quarter can benefit them by getting the help they need, this was not the case in winter 2012. Peer Educator meetings can happen as late as week 10 of the quarter. Results show that over 80% of these students attend their PE meetings after mid-term exams have concluded in most courses. This may be too late for Peer Educator meetings to benefit the final grades of some students. Findings do suggest that most students found their Peer Educator appointment to be helpful whether or not it had an impact on the course they were struggling with. It is likely the suggestions PEs made to students can have effects on study habits in other courses as students continue their education at UCR.

In an effort to make this program more beneficial to more students, we suggest sending a more detailed email to at-risk students after their early assessment grades have been processed. This study shows that some at-risk students chose to use other ARC services instead of the PE meeting and that other ARC services can be beneficial to students' final grades. This suggests that a list of ARC services may be useful to include in the email. We suggest the email be sent from the professor and should show the professor's concern for the student's success in the course. The email should also say that the student is currently at risk for failing the course and include a list of potential ARC services the student can use to improve their likelihood of success in the course. It would be beneficial to include a link to the ARC website so students can obtain schedules for the available ARC services, especially those relevant to their course (e.g. Supplemental Instruction and Tutoring). A follow-up email can be sent by the ARC to reinforce its benefits and provide further descriptions of the programs available to students.

We also recommend that Peer Educator meetings be removed from the program for courses in which their involvement seems not to affect student grades. An alternative would be to determine whether PE meetings vary in some patterned way between classes in which they are successful and classes in which they show no effect. This is a matter for discussion because clearly, the content covered in PE meetings may be helpful to some students by acting as an orientation to the ARC and a way for students to get suggestions to improve their study habits.

If PE meetings continue, a more efficient way of scheduling them will be necessary. They should be scheduled early in the quarter before mid-term exams have been administered to allow ample time for students to make changes in their study habits. Currently, scheduling students for appointments takes too much time and deprives some students the opportunity to meet with ARC staff soon enough to affect their grades. We suggest an online scheduling system in which students are given the opportunity to sign in and select an available time that works best for them. This puts the responsibility on the student and allows students to decide how they would like to handle their at-risk status in their course. If students do not schedule an appointment within two days of the initial email, the ARC should send a reminder.

One benefit of PE meetings thus far is that they have provided information about the troubles our at-risk students are facing in their courses. The past 4 quarters of the program have shown consistently that a majority of our students struggle with course content, report poor time management, procrastination, and/or have not obtained or read the course text. In most cases, the PE has provided handouts and advice on how to fix these issues. If a majority of our students are having the same problems, we can augment the current EW program to better identify these issues and connect students with appropriate services in the ARC. Instead of having students meet with peer educators, they can take a diagnostic survey online to help identify the nature of their problems. Those results can then be used to connect students directly with services in the ARC designed to address their issues. For example, students struggling with time management and procrastination can be signed up to attend the Time Management Workshop hosted by the ARC. Students struggling with course content can be signed up for drop-in tutoring or Supplemental Instruction if it is available for their course. We can then reallocate the funds used to employ peer mentors toward employing more tutors, creating more supplemental instruction sections, and/or creating more workshops. Current Peer Educators can be hired into those roles instead of having to meet with students one on one.

In the future, we also suggest that the ARC provide a follow-up survey asking students how ARC services and PE meetings have or have not helped them to change their study habits so we can gain a deeper understanding of the benefits and limitations of this program.

Table 1: Participation Rates by Course

	EW At-Risk Population[a]	Course Enrollment	EW At-Risk Rate	EW Appointment Given[b]	EW Appointment Attended[c]	EW Participation Rate
Anthropology 1	249[d]	447	55.7%	227	44	19.3%
Biology 5A	68	304	22.4%	68	34	50.0%
Chemistry 112B	92	303	30.4%	89	43	48.3%
Math 4 (001)	27	91	29.7%	27	13	48.1%
Math 4 (010)	6	78	7.7%	6	1	16.7%
Math 4 (020)	35[e]	89	39.3%	30	5	16.7%
Math 4 Total	68	258	26.4%	63	19	30.2%
Math 8A (001)	12	87	13.8%	11	6	54.5%
Math 8A (010)	29	75	38.7%	28	15	53.6%
Math 8A (020)	13	77	16.9%	13	4	30.8%
Math 8A Total	54	239	22.6%	52	25	48.1%
Physics 40A	86	286	30.1%	86	32	37.2%
Psychology 2	139	568	24.5%	133	47	35.3%
Total	756	2,405	31.4%	718	244	34.0%

a EW participation is determined by early assessment grades extracted from iLearn.

b Students did not receive appointments due to schedule conflicts, incorrect contact information, or a lack of availability of time slots.

c Number of students who logged in for their PE appointment via AccuTrack. Sign-ins were corrected using course data if students signed in for the wrong course (15 students).

d Anthropology 1 students were emailed by their professor if they scored 10 points or less on a quiz (185 students). The ARC emailed a larger group of students, those earning 10.5 points or less on the quiz (249 students).

e Math 4 section 20 students were emailed by their professor if they scored low on a quiz or if they scored 69 or lower on an exam (28 students). Students were emailed by the ARC if they scored 69.7 or lower on the exam only (30 students). Each of these criteria resulted in isolating different sets of students. Five students emailed by their professor were not emailed by the ARC and seven students were emailed by the ARC but not emailed by their professor.

Table 2: Early Warning Program Meeting Report (Intake Form)

I. Reason for Poor Performance		
Academic Issues	**148**	**59.2%**
Problem with Course Content	88	35.5%
Trouble Understanding Professor	25	10.0%
Dislikes the Subject	30	12.1%
Not Prepared for Course Demands	41	16.5%
Clicker or Internet Problems	3	1.2%
Other (Specify)	20	8.1%
Study Habits	**204**	**82.2%**
Did Not Obtain or Read Text	49	19.8%
Poor Class Attendance	14	5.7%
Poor Time Management	106	42.7%
Procrastination	92	37.1%
Difficulty Concentrating	34	13.7%
Test Anxiety	23	9.3%
Other (Specify)	62	25.0%
Personal Issues	**35**	**13.9%**
Family Problems	9	3.6%
Health Problems	7	2.8%
Other (Specify)	21	8.5%
Student Feels He/She Does Not Need Help	**10**	**4.0%**

II. Assistance Provided		
Reviewed Course Content and/or Homework	**104**	**42.9%**
Providing Coaching/Handout on Study Skills	**199**	**79.6%**
Time Management	105	42.3%
Test Preparation/Test Taking	95	38.3%
Note Taking	50	20.2%
Better Reading	38	15.3%
Concentration/Motivation	54	21.8%
Other (Specify)	71	28.6%
Provided Advice on Personal Issues	**27**	**10.9%**

Notes:

1) The rows in blue report the number and percent of students who identified at least one of the issues in its grouping as a problem. Potential problems are listed in white below each blue heading.

2) The rows in white will not total 100% because peer mentors selected all issues identified by a student. Figures reported represent how many students responded to that category.

Table 3: Early Warning Action Plan

I. Seek Outside Assistance		
Professor's Office Hours	149	64.2%
TA's Office Hours	164	70.1%
Drop-In Tutoring	159	68.5%
Supplemental Instruction	103	44.4%
Study Skills Workshop	27	11.6%
Counseling Center	12	5.2%
BCOE Academic Advising	2	0.9%
CHASS Academic Advising	15	6.5%
CNAS Academic Advising	8	3.5%
Career Center	30	12.9%
Student Special Services	2	0.9%
Student Life	10	4.3%
Other (Specify)	23	9.9%

II. Take Personal Action		
Do Homework and/or Practice Problems	123	53.0%
Review Lecture Notes	156	67.2%
Attend Lecture/Discussion	40	17.2%
Obtain/Read Textbook	58	25.0%
Study More Effectively	97	42.8%
Improve Time Management	92	40.0%
Study with Classmates	73	31.5%
Other (Specify)	47	20.3%

Note:
The rows in white will not total 100% because peer mentors selected all issues identified by a student. Figures reported represent how many students responded to that category.

Table 4. Summary of Use of ARC Services and/or PE Meeting

	Number	Percent
How many students used ARC services and/or attended a PE Meeting?	393	52.0%
How many received an email before using ARC services or attending a PE meeting? (N=262)	205	52.2%
How many only used ARC services (no PE meeting)?	150	38.2%
How many only attended a PE meeting?	128	32.6%
How many attended a PE meeting and used ARC services?	115	29.2%
How many attended a PE meeting before using ARC services?	31	27.0%

Table 5: What ARC Services did students use?

	Number of Students	Percent of ARC Users N=393	Percent of Total At-Risk N=756
Tutoring	85	21.6%	11.2%
Peer Counseling	16	4.1%	2.1%
Study Workshops	12	3.1%	1.6%
Supplemental Instruction	191	48.6%	25.3%
Pentland Tutoring	5	1.3%	0.7%
Peer Educator Meeting	244	62.1%	32.3%
Additional Peer Educator Meeting	16	4.1%	2.1%

Table 6: Average Course Grade by Attending Peer Educator Meeting

	EW At-Risk Attended Meeting	EW At-Risk Did not Attend Meeting, Did not use other ARC services
	Mean (Std. Error)	**Mean (Std. Error)**
Course Grade	1.85* (0.07)	2.15* (0.06)
Anthropology 1	2.58 (0.14)	2.66 (0.08)
Biology 5A	1.58* (0.13)	1.00* (0.38)
Chemistry 112B	1.55 (0.12)	1.38 (0.16)
Math 4	1.15 (0.27)	0.80 (0.17)
Math 8A	0.61 (0.21)	0.85 (0.35)
Physics 40A	2.06 (0.16)	2.11 (0.13)
Psychology 2	2.44 (0.13)	2.20 (0.09)

* Indicates statistically significant at the 0.05 level.

Table 7: Average Course Grade by Used Other ARC Services (No PE Meeting)

	EW At-Risk Used Other ARC Services	EW At-Risk Did not Attend Meeting, Did not use other ARC services
	Mean (Std. Error)	**Mean (Std. Error)**
Course Grade	2.00 (0.10)	2.15 (0.06)
Anthropology 1	2.86 (0.11)	2.66 (0.08)
Biology 5A	1.23 (0.18)	1.00 (0.38)
Chemistry 112B	2.02* (0.22)	1.38* (0.16)
Math 4	1.20 (0.37)	0.80 (0.17)
Math 8A	0.62 (0.21)	0.85 (0.35)
Physics 40A	2.31 (0.19)	2.11 (0.13)
Psychology 2	2.48 (0.16)	2.11 (0.09)

* Indicates statistically significant at the 0.05 level.

Table 8: Average Course Grade for Students who used ARC Services and/or Attended a PE Meeting

	EW At-Risk Used ARC/PE Services	EW At-Risk Did not Attend Meeting, Did not use other ARC services
	Mean (Std. Error)	**Mean (Std. Error)**
Course Grade	1.90* (0.06)	2.15* (0.06)
Anthropology 1	2.71 (0.09)	2.67 (0.08)
Biology 5A	1.44 (0.11)	1.00 (0.38)
Chemistry 112B	1.67 (0.11)	1.38 (0.16)
Math 4	1.17 (0.21)	0.80 (0.17)
Math 8A	0.62 (0.15)	0.85 (0.35)
Physics 40A	2.17 (0.12)	2.11 (0.13)
Psychology 2	2.45* (0.11)	2.20* (0.09)

* Indicates statistically significant at the 0.05 level.

Figure 1: Early Assessment Grades for At-Risk Students by Class

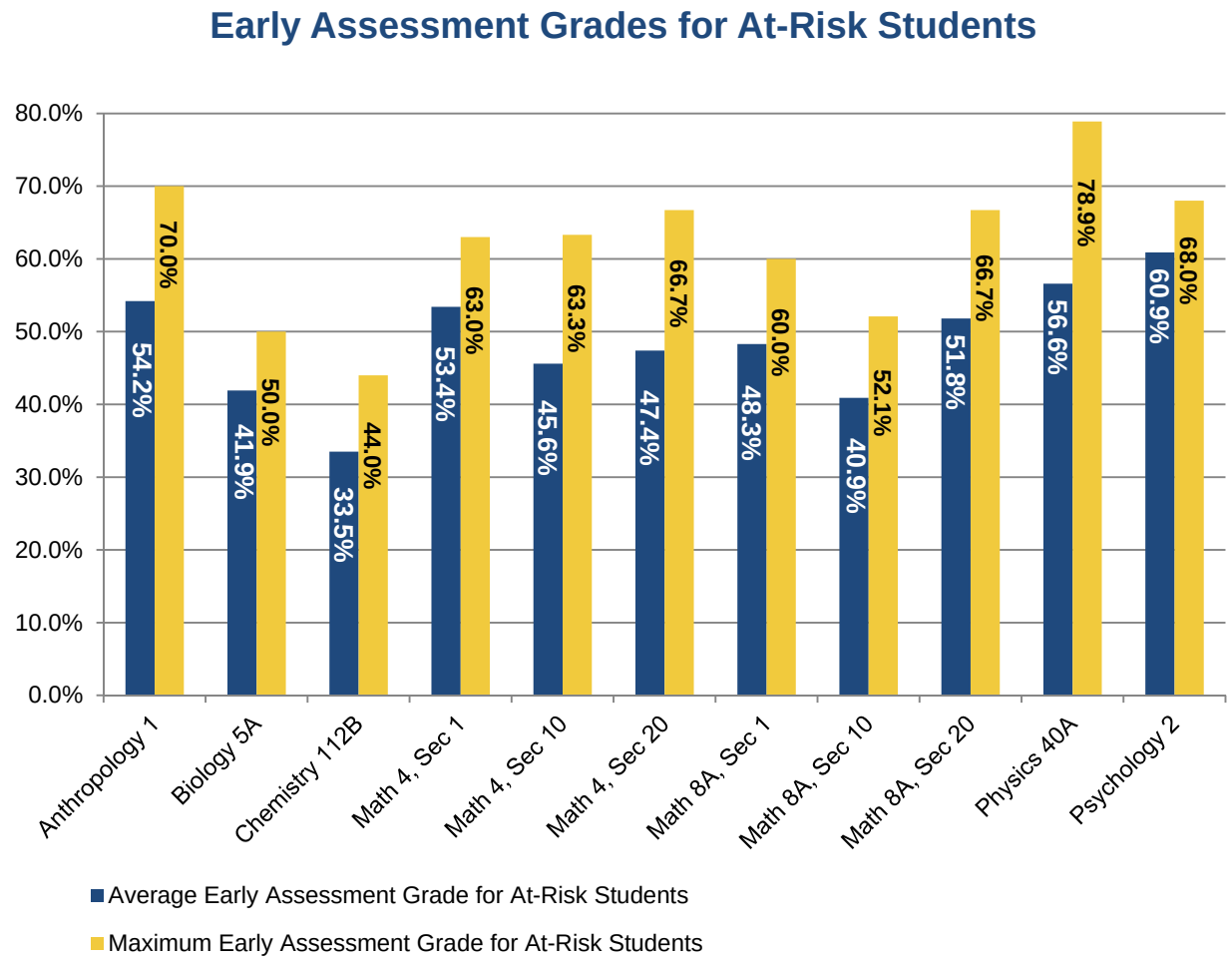


Figure 2: When do Students Receive their EW email, Meet with a Peer Educators, or use other ARC services?

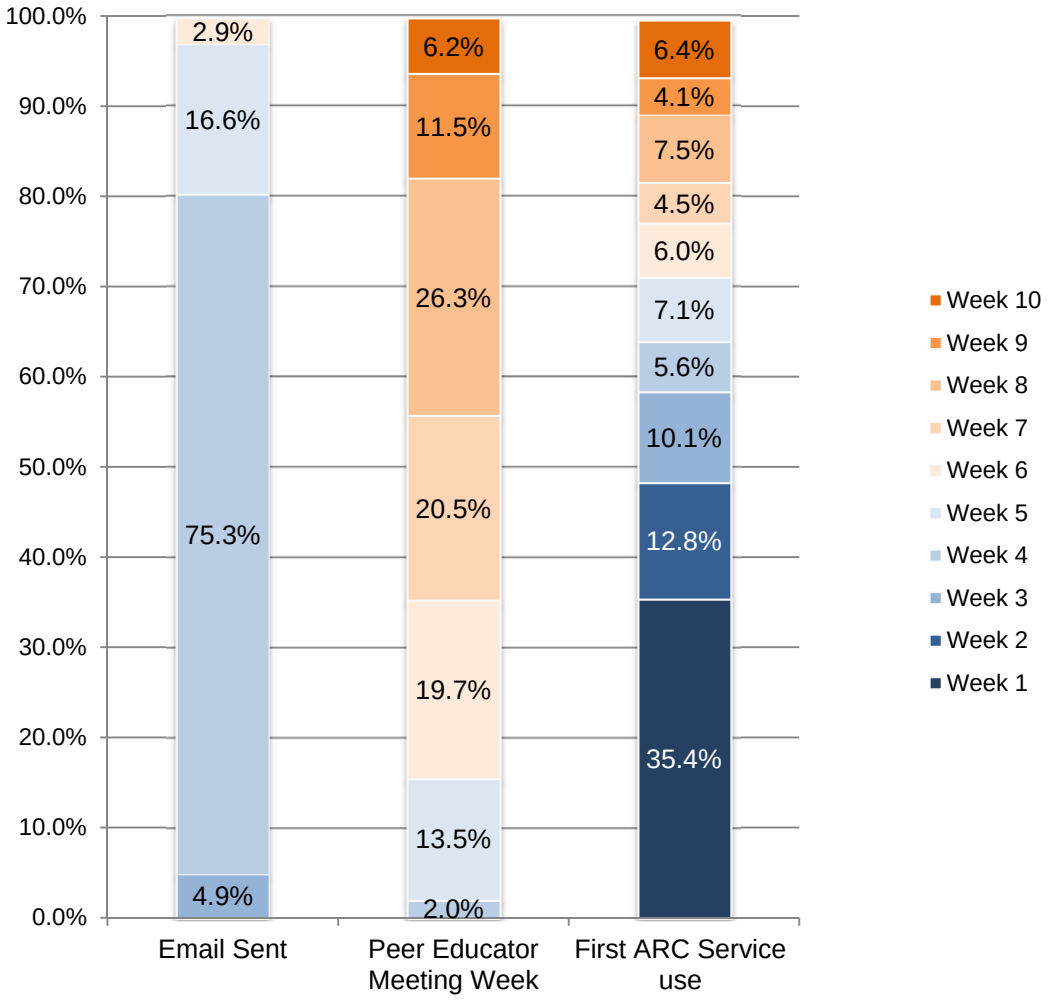
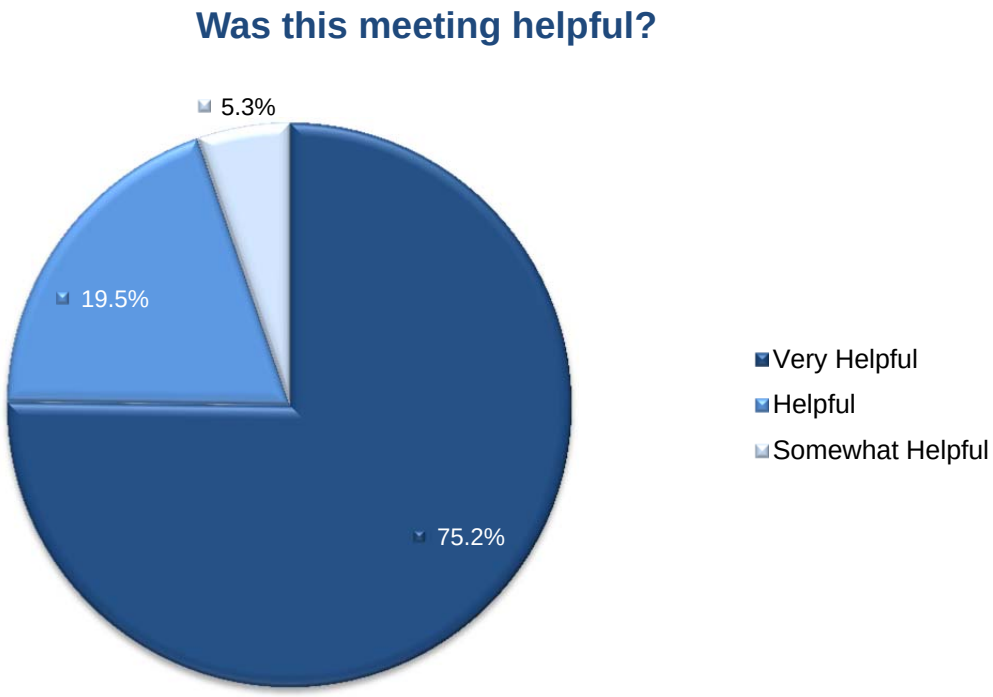


Figure 3: Helpfulness Ratings of Peer Educator Appointments (N=133)



Appendix A: Early Warning Evaluation Design