

**Focus Group Findings: PLC
Post-Treatment Attitudes and Opinions
AY 2002-2003 Davis Project
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ABSTRACT

A focus group was conducted with volunteers from each section of the 2002-03 “Project-based Learning Communities, PLC’s” at WPI (Section 1: 8 males, 1 female; Section 2: 2 males, 2 females) to elicit opinions and attitudes about the 2002-03 PLC. Topics of discussion included the following: academic challenge, style of the PLC classroom, relationships with professors and other students, interconnectedness of course material, and the transition to traditional courses. There were considerable differences in the experiences of students from each section, with Section 1 students having had a generally more positive experience than Section 2 students had. Differences appear to be primarily due to the degree of fit between participants and program expectations. For future offerings of the program, it is suggested that recruitment practices be revised to help attract students to the program who will most benefit from the style of learning that the PLC offers.

GOAL OF THE FOCUS GROUP

Working under the assumption that student responses in focus groups would yield rich information about the experiences of the Project-based Learning Community (PLC) students at WPI that would not be available through a paper-and-pencil survey, focus groups were conducted. The questions used to guide the focus groups were designed to elicit student opinions, attitudes, and perceptions about the 2002 - 2003 Davis PLC Program.

METHOD AND DATA COLLECTION

Potential participants were identified from the roster of 2002 - 2003 PLC students. (Excluded from recruitment were two students whose records indicated they were transfer students (i.e., not new first-year students).) Students were recruited via e-mail and offered \$20 in exchange for their participation. Students were assured that confidentiality would be maintained.

A complete list of core questions used during the focus groups may be found in the Appendix.

The focus groups were run on January 28, 2003, approximately six and a half weeks after students had completed the PLC program and approximately two and a half weeks after students had begun taking classes in traditional classrooms. All proceedings were audiotaped and videotaped.

PARTICIPANTS

The 2002 - 2003 PLC comprised two sections, with each section headed by different professors. Because it was possible that the experiences of the PLC students from each section were different, a separate focus group was conducted for each section. All students who expressed interest in participating in a focus group were invited to participate. For Section 1, of the 23 students who were invited, nine students – eight males and one female – participated. For Section 2, of the 22 students who were invited, four students – two males and two females – participated.

FINDINGS

Because there were obvious and important differences between the feedback that was received from students from each PLC Section, the findings are reported separately for each section. It appears as if the considerably different experiences of each group were the primary result of the goodness-of-fit between the students in the program and the philosophy and expectations of the program. Other factors likely contributing to the differences are the following: the characteristics of the instructors for each PLC section, the characteristics of the students from each section, and the interplay between the instructors and the students.

FINDINGS – PLC Section 1

General information about participants

Based on comments that students made during the focus group, it appeared as if all of the participants in this focus group had worked hard as project team members and had felt as if they had contributed fairly to the completion of the projects.

While one participant had joined the PLC during orientation, all others had actively sought out membership for the PLC before arriving on campus.

General reactions to the program

All Section 1 focus group participants were pleased that they had joined the PLC. They believed that the exposure they had gotten to material was more diverse than they would have gotten otherwise, especially regarding the Humanities. They believed they learned a lot through the projects and most indicated that they learned some very useful presentation skills (e.g., PowerPoint, public speaking).

Academic challenge

All PLC Section 1 focus group participants believed that they learned more in PLC than they had in other courses they had taken since leaving PLC. They believed that PLC homework assignments were designed to mesh with goals of the courses better than assignments from traditional courses were, and they further believed that being required to re-take failed Calculus goal quizzes, being given the option to re-take Physics exams, and being allowed to keep their Physics homework assignments served to aid them in learning material “backwards and forwards.” Participants agreed with one student who said that he does his homework now (from traditionally-taught courses) just to get it done, but that in PLC he did his homework to help him learn the material.

Students generally agreed that the workload for PLC was much greater than it had been for the courses they had taken since leaving PLC, but they further agreed with one student who said, “I have more free time now, but I liked it better before because I knew the stuff.”

Style of the PLC classroom

The PLC Section 1 focus group participants liked the style of the PLC classroom for three reasons:

1. They believed the project work was good preparation for their future sufficiencies.
2. They believed the atmosphere was more supportive than that of a traditional classroom.
3. They believed they were able to learn better than if they had been in a traditional classroom.

The participants believed that the project focus of the PLC would serve them well when they began working on their sufficiencies because the skills they learned while working on their PLC projects were relevant to the work they would be doing on their sufficiencies.

The participants said that the PLC format was “better than lecture” because a professor was always available, PLAs were available, students had the opportunity to talk with a professor every day, students could study with a group of people at tables (instead of at small desks), the atmosphere was more personal than in a traditional classroom,

there were “white boards everywhere,” and there was a lot more discussion than occurs in traditional classrooms. Additionally, they said that they knew they always had a place to go to study, that they were almost always guaranteed that someone was going to be there with whom they could work, and they knew that they could get access to the room whenever they needed it just by calling John Zeugner. They also thought it was “awesome” that “former PLC students” (2001 – 2002 Tutorial students) also used the room for working and were willing to provide help to them. The PLC Section 1 focus group participants were also pleased that the PLC room would be available for their future use, too. All of these features of the PLC classroom made the PLC students feel supported in their efforts to learn at WPI.

Aside from feeling as if the PLC classroom was more supportive than a traditional classroom, the PLC students also felt as if they learned better in the PLC environment than they did in traditional classrooms. There were two reasons for this: 1) students were able to get clarification on an as-needed and immediate basis, 2) the PLC students often served as teachers to other PLC students, and this strengthened their own knowledge. PLC students believed that having the opportunity to ask questions as they arose was a significant boon to their learning. Students said that in typical classroom situations, when they cannot seek clarification at the moment when they first become “stuck,” they continue not to understand and that eventually “it gets really confusing.” In the PLC, however, students were able to learn more easily because the open and immediate communication they had with professors and with other students prevented them from getting mired in their own confusion.

PLC students believed they learned better in a PLC classroom than they do in traditional classrooms because each of them had the experience of teaching others. One student said, “You learn a ton of stuff more by teaching,” another student added “I learned a heck of a lot more than I would have if I’d just done the homework . . . and taken the exams,” and all other students in the focus group agreed that the teaching component of the PLC was a big benefit to them. Comments from the group revealed that the PLC students were aware they each had different strengths and different weaknesses and that the PLC environment allowed them to capitalize on these differences and work with them in a way so that, in the words of one student, “collectively, we all understood everything a lot better.”

Working with professors

Focus group participants believe that they had good relationships with the PLC professors and that these positive relationships were a function of both the professors’ approaches and the general atmosphere of the PLC. They described their enjoyment of working with the PLC professors by contrasting their experience with PLC professors with their experience with traditional classroom professors: PLC professors were more personable, more approachable, and more interested in engaging in *dialogues* with students about material and ideas. Additionally, PLC professors knew the students’ names and created a tension-free classroom in which students could freely speak.

A number of students also discussed the love-hate relationships they had developed with Professor Heinricher. These students cited instances in which Professor Heinricher was relentless in his efforts to get them to work at understanding Calculus and in which they were overwhelmed with this approach (one student even walked out of the room after being told it was necessary to re-take a goal quiz), but found themselves continuing to work, and later found themselves grateful for having learned the material so

well. One student said that he has not learned as much with any other professor at WPI as he had learned with Professor Heinricher.

Working with other students

Despite the fact that, when asked about their experience with teamwork in the PLC, a number of students agreed with one student's statement, "Sometimes it was great, sometimes you wanted to shoot yourself," all PLC Section 1 focus group participants believed they benefited from the PLC in terms of working with other students. They agreed that it was fun, and they believed that they learned more than they would have learned had they worked individually.

The students' views about, and approaches to, teamwork appear to have been positively affected by their experience working on projects in PLC. The students said that from their project work they learned how to work together, rely on others, accept the shortcomings of others, and "work with what you're given."

Personal comfort translated to academic courage

PLC Section 1 students believed that because everyone in PLC knew one another, the discussions were better than they would have been otherwise. They believed that because everyone felt comfortable with one another, they were freer to speak openly and honestly without the fear of embarrassment that they would have felt in a large lecture hall in which they did not know anyone else and in which the professor did not know them.

One student inadvertently conveyed both how well the PLC Section 1 students knew one another and also how easy it was to speak freely in the PLC while he was conveying a story on communicating with a PLC professor, and said that he had said to the professor "Wait, we don't understand this." When the focus group moderator then asked how it was that he was able to use the pronoun "we" instead of "I" when asking for clarification from the professor, he said that the PLC students knew each other so well that they were able to look over at other students to determine to what extent they were (or were not) understanding the material that was being presented. If others did not understand what was going on, a student felt confident to speak for the group, and if others did know what was going on, the student might then get help immediately from some other student, without having to interrupt the lecture.

The personal comfort that some students felt in the PLC also aided them in developing better public speaking skills. Some students admitted to having been very afraid at the beginning of PLC of giving presentations in front of a group, but they felt that the support they received in PLC helped them to lose any apprehension they may have had and to greatly improve their public speaking skills. One student, whom many others agreed had been very bad at giving presentations initially, said, "I never spoke in public before, and if I didn't have PLC I probably wouldn't be speaking now."

Interconnectedness of course material

While students agreed that the projects in the PLC contributed a lot to making them think about the interconnectedness of courses and material, they also believed that material in the PLC was less interconnected than the professors had wanted it to be. They thought, though, that because there just aren't connections between some materials covered in the PLC that it would just have to be the case some PLC material remains unconnected from other PLC material.

Students cited an example of an interconnection that they thought was made very well and of another they thought was forced. Some students were pleased when they worked with vectors in Calculus and Physics simultaneously – they believed that the pairing helped them understand the Physics better, and they wished that a lot more material would have been presented in that fashion. All but one student complained about the inclusion of The Tour of Calculus in the PLC. They believed that the book might have been useful in another year or two, but believed that it “didn’t belong” in introductory Calculus and commented that it “was just off the wall.” They also believed that their Calculus test should not have included questions about material from the book.

Transition to traditional courses

In general, the PLC Section 1 focus group participants had a difficult time making the transition from the PLC to regular classrooms. Comments on the difficulty of the transition were focused on the lack of support that students felt when taking regular classes, and students indicated that they were disappointed because they were not learning as much or as well from traditional classes as they had in PLC.

Regarding the lack of support PLC students encountered when they entered regular classrooms: Focus group participants said they missed having other students available to study with, being in an atmosphere that was designed to help them get what they needed to learn what they wanted to learn, knowing where to find a PLA or a TA, having professors who would talk with students and who were interested in having a dialogue with students, and having their questions answered in class. These were all features of the PLC that students believed had aided their learning, and in the traditional classroom they had to learn how to learn without them.

Student complaints about the difficulty of the transition to regular classrooms did not just focus on classroom features that made learning a more difficult feat to accomplish, though. Students indicated that they truly were not learning as well in traditional classrooms as they had in PLC. They said that because homework is now collected, they do not have the opportunity to use it as a study aid; because they do not have study groups, they sometimes just cannot figure some things out and have to “turn in homework without understanding it;” because the professors do not give makeup quizzes and exams, the opportunity to learn some concepts is lost. One student said what he had gotten from the PLC was what he had expected to get from WPI, but that he is not really getting that from the traditional classes he was taking. Almost all of the students agreed with him when he further commented, “Before [in PLC] you knew what you were doing and you could get through it. Now the goal is just getting the tests passed – it’s not really about what you know.”

Connections to WPI

When asked if they felt as if the PLC linked them to WPI in any way, one student responded, “Oh, yeah – whenever I think of WPI the PLC will stand out more than anything I’m doing now.” Others agreed that because the PLC professors knew them and still talk to them, and because they felt as if they were part of a group when in PLC, and because they do not know any of their current professors, that the PLC experience connected them to WPI in a significant way.

Some negative aspects of the program

A large number of students were disappointed in the manner in which their Physics conferences were run. They said that the conference leader tended not to show up for conferences very often and that the PLC students “never had any idea what we were doing.” They stated that they attempted to seek help elsewhere – from PLAs and from the conference leader for PLC Section 2 – but that it “would take a lot longer to get to where we were going than if we had the conference leader there and just saying ‘OK, this is where you need to get to.’” They added that whenever they had questions the conference leader would explain them very well, but that there was not anything to do when the conference leader was not there.

Suggestions for changes in the PLC

Some PLC Section 1 focus group participants suggested that future PLC courses select students for participation who are willing to contribute fairly to the team projects. They felt that it was not fair that some students passed through the PLC because they “scrounged off” of others who worked hard.

FINDINGS – PLC Section 2

General information about participants

Based on comments that students made during the focus group, it appeared as if all of the participants in this focus group had worked hard as project team members and had felt as if they had contributed fairly to the completion of the projects.

One participant had signed up for the PLC before arriving on campus and one other signed up for the PLC after arriving on campus and hearing from a 2001 - 2002 Tutorial student that it would be a great experience. The remaining two students bitterly complained that while they had not applied to be in PLC, they had been “forced” to join PLC when it had not been possible for their requests to enroll in certain classes to be met in any other way. Aside from feeling as if they had had no choice about enrolling in the PLC, these students felt disadvantaged because they had not done the summer reading that had been expected of all PLC students.

General reactions to the program

While two of the participants were pleased with Calculus and Physics portions of the program and would join PLC again because of those aspects, the two others were generally displeased with the program and regret having been a part of the program. The two who had been pleased echoed, to a large extent, the sentiments of the Section 1 students. The two who had been displeased agreed that they did not like the attention they received in the PLC, and one nodded in agreement while the other said, “I want to slip through the cracks and not be seen . . . be by myself, do what I have to do, get it done with. Leave me alone.”

Academic challenge

Perceptions about the academic challenge that the PLC offered were split: The two who were pleased with having been in PLC believed that the challenge of PLC was equal to that of traditional classes but that the style of the PLC classroom offered learning advantages that the traditional classroom did not. The two students who regretted having enrolled believed that they would have been more academically challenged had they enrolled in regular classes.

The students who believed they would have been more academically challenged in traditional classes gave indication that challenge, for them, came in the form of external motivation and that the PLC did not offer enough external motivation for them to succeed. They agreed that because they were not being “forced” or “pushed” to complete Calculus assignments, because their Physics homework was not collected, and because there were ample opportunities to make up Calculus quizzes, they did not feel compelled to do the work. (It was obvious that these same students, though, took their project work seriously, and contributed fairly to the completion of projects; they knew they were accountable to others and they followed through on the expectations that had been placed on them.)

Style of the PLC classroom

PLC Section 2 focus group participants liked the style of the PLC classroom for various reasons. They believed that the following aspects of the PLC classroom were beneficial to them: having access to computers and copy machines, having wireless networking in the classroom, and being loaned a laptop computer for the duration of the PLC. More importantly, though, some students liked the “hands-on” style that was used to teach Calculus and Physics, and they believed that the flexibility with which material was taught – allowing for questions to be asked as they arose and allowing for directed feedback to be given immediately – benefited them academically. One student commented that the lack of flexibility (regarding questions and answers) in a traditional classroom does not allow her to learn as well as she had in the PLC classroom.

Working with professors

All focus group participants agreed that they were comfortable working with the professors. They thought that the professors appeared “human” and were approachable. They believed that the “PLC teachers were a lot more helpful” than professors they had since encountered in traditional classrooms at WPI. Some of the students believed the relationships they had made with the PLC instructors benefited them because the PLC instructors’ knowledge of individual students aided the instructors in understanding 1) the rationale behind questions that students asked them and 2) the knowledge that the students either did or did not possess, and that this, in turn, helped them to provide feedback to students that was more helpful than it would have been otherwise.

Some students view some of the PLC professors as resources to them even now, after the PLC has ended. They said that when they need help in either Calculus or Physics they now know of one good professor in each area who will either help them or direct them to someone else who can help them.

Some students also commented on specific things about professors that they believe helped them: Professor Koleci showed a genuine concern for students, arrived to class early to answer questions, created review sheets, provided direct help on a daily basis, and helped students during B-term with Physics (when she was not teaching the Physics course herself) when the students approached her because they were not receiving adequate support from the PLC Physics instructor who had been assigned to teach the course in B-term.

Professor Hanlan gave students freedom to complete assignments in the ways the students chose and he made them feel trusted, respected, and as if they were responsible adults.

Working with other students

The participants in this group all agreed that a benefit of working in the PLC was that they were introduced to other students with whom they could then work, which is not a feature that the traditional classroom offers.

Participant attitudes about teamwork were not positive, though. When asked about how the PLC affected their ideas about teamwork, students made the following comments: “some people are good at [working on teams] and some people aren’t,” “if we’re all different, there’s just going to be fights,” and “you need a bond or the same respect to make [teamwork] work.” Those making these comments were two participants had worked on the same team together and had as their partners one student who did only a little work on the projects and another student who contributed nothing to the projects. They had not had good experiences working with their project teams, and now hold beliefs that teamwork will only be successful if all team members are pre-disposed to working on teams and if all team members take the same approach to teamwork.

Interconnectedness of course material

While the students appreciated Professor Hanlan’s flexible yet very supportive approach to working with them, none of the students liked having to take the Humanities portion of the PLC. They further stated that they did not believe that there was any connection between any PLC courses. One participant said, “they were three completely separate things,” and the others agreed. They stated that the only connection in PLC was that students were in the same groups for each of the projects.

Transition to traditional courses

As might be expected, the students who had not enjoyed the PLC did not mind the transition to the traditional classroom, and those who had enjoyed the PLC did not like the transition. The students who had not liked the PLC enjoyed their traditional classes more than they had enjoyed the PLC classes. They felt as if they were able to exercise freedom of choice when returning to the traditional classroom in terms of both the courses they were taking and the times they were choosing to take them. They felt as if they were no longer being forced to take any courses. One student commented that he learned from the PLC that he had to push himself a little harder but that he felt that he could do traditional classroom work better than he could do PLC work.

Those who had enjoyed the PLC view the traditionally taught courses as not being as beneficial to their learning as PLC courses had been. One student elaborated, saying that in PLC students “constantly had access” to someone who could help them and who could answer questions. Another student continued to explain the difference between PLC and the traditional classroom, sarcastically commenting that in a traditional course, if a student needs help or has a question the response is “Good luck!”

Other comments about why PLC was better than traditional courses focused on issues that might have had less to do with the PLC *qua* PLC and more to do with features of the material covered in PLC and characteristics of the PLC faculty:

- Many PLC students had previously covered material that was being covered in PLC.
- Some PLC professors provided PLC students with sample quizzes.
- PLC professors spoke fluent English.

Connections to WPI

PLC Section 2 focus group participants said that they did not feel very connected to WPI. The lack of connection that students felt to WPI appears to be due to two factors: 1) physical isolation from the rest of the campus and 2) inaccurate perceptions that non-PLC students had of PLC students. Participants said that they felt somewhat alienated because almost all of their classroom work took place in the PLC room and that they had no reason to venture into other parts of campus. Some students said that they lived in the same building in which the PLC had been housed and that this was especially alienating for them because it did not encourage them to see any more of the campus.

Students also felt separated from WPI either because other non-PLC students perceived them as being members of a group that was distinctly different from other students on campus or because they believed that non-PLC students perceived them as a separate group. One focus group participant had been approached by a non-PLC student with the comment “You’re in the SPED group, huh?” and, while she indicated that she shrugged it off at the time, she did seem bothered that someone believed that she was part of a “special education” program at WPI. Another said that non-PLC students interpret some of the characteristics of the PLC (e.g., not having to turn in Physics homework, being able to re-take Calculus quizzes) as being eased requirements that differentiate PLC students from all other WPI students. Another student suspected that as he headed over to Olin Hall with the rest of the PLC students for Physics lecture other WPI students were viewing them as the group of special needs students who all had to stick together to survive.

Some negative aspects of the program

Students believed that the grading system used in their section of the PLC was problematic. One student believed that for one of the PLC courses she received a higher grade than she should have received: The records for the class had been stored in a non-secure location and were subsequently stolen. She believes that her higher grade was the result of the fact that she attended classes regularly and that the instructor knew her face.

Other students believed that grading on projects was unfair within groups and across projects. These students said that despite conversations with the instructor about the “zero contribution” to projects by some team members, grades for “slackers” remained just about as high as grades had been for those who contributed significantly to the projects. Students said that even after the use of an “attributions page” was seriously implemented for projects, grades for those contributing little to projects remained just as high as those contributing the majority of the work. These students also felt that regardless of the amount of effort that they did or did not put into projects, they consistently received the same grade and felt as if their work was being graded on early-established impressions that the instructor had made of them and their work. At times, they had the additional impression that their work was just not being read.

The participants had some additional criticisms of the program. While not every student agreed with every point, all are included here to give those interested in continuing the program in the future some ideas to consider:

- Some students believed that having a Physics lab would have helped PLC students to develop a better understanding of some principles of Physics.
- Some students believed that watching student presentations took too long and got boring because so much information was redundant across groups.

- Students complained that projects were not linked to one another. They perceived them as having been randomly selected.
- Students thought the transportation and economy projects were “bad.”
- Students believed they “suffered” when they were on project teams that included a student who did not fairly contribute.
- One student believed the course requirements of the PLC interfered with her ability to complete a language sufficiency.
- Some students believe they did not learn anything that could help them write a paper.
- Students believed that the feedback that PLC students were asked to give on others’ projects and others’ performance created too much work for the PLC students.
- Students said that the PLAs that had been designated for the PLC would all go to Section 1, leaving Section 2 students with no PLAs.
- Students said that the Physics professor for B-term refused to work with students outside of lecture and devised problems for students to complete that the students perceived as irrelevant to their work.

Suggestions for changes in the PLC

The PLC Section 2 focus group participants made the following suggestions for future PLC courses:

- Relate the Humanities portion of the course to the Physics and Calculus portions.
- Increase the communication between the PLC professors (within each separate section).
- Arrange to have student records kept in a location other than the PLC room (2002-2003 records had been stolen).
- Restrict access to the PLC room to only PLC members (students who had not been in PLC (or former Tutorial) were in PLC room, using computers and printers).

DISCUSSION

While it is impossible to know if the focus group participants for each PLC section were representative of all of the students who attended each section, it is clear that some students had a better experience in the PLC than did others. It is also clear that those students who had the worst experiences in the PLC were those whose approaches to learning ran counter to the approach offered by the PLC. Future offerings of the PLC would likely benefit from efforts to recruit students into the program whose learning styles and goals mesh well with the philosophy and goals of the PLC program.

Because it is not likely that all differences between the groups were due to the goodness-of-fit between students and the program, efforts are currently underway to explore what other factors may have contributed to creating such vastly different experiences.

APPENDIX

Core questions used in guiding the focus group:

- What did you like the most about the PLC program?
- What did you like the least?
- What would you change if you could?
- Why did you apply to be in this program?
- To what extent do you feel the PLC program challenged you academically?
- To what extent are you satisfied with the academic aspects of your first two terms at WPI?
- What was the transition like for you when you moved out of the PLC and into “standard” classes?
- Do you believe that being a part of the PLC program helped you in any way?
probe:
 - academically?
 - personally?
 - socially?
 - other?
- Do you believe that being a part of the PLC program hindered you in any way?
probe:
 - academically?
 - personally?
 - socially?
 - other?
- How did the PLC program affect your ideas about the interconnectedness of courses and material?
- How did the PLC program affect your ideas about teamwork?
- Do you feel as if the PLC linked you to WPI in any way?
- Do you have any other comments or suggestions on the PLC Program?
- How do you feel about WPI?