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This chapter explores the "educational alliance" among students and between students and instructors. We contend that this is a framework that can help us understand how active learning classrooms facilitate positive educational outcomes.

Active Learning Classrooms and Educational Alliances: Changing Relationships to Improve Learning

Paul Baepler, J. D. Walker

Introduction

A growing body of research on the impact of newly configured, technology-enhanced learning spaces shows that these classrooms can have a variety of positive effects on teaching and learning at the postsecondary level, including improvements in student affect and motivation, student engagement, and student learning outcomes (Beichner et al. 2007; Brooks 2011, 2012; Dori and Belcher 2005; Walker, Brooks, and Baepler 2011; Whiteside, Brooks, and Walker, 2010). One question that arises on the heels of these results has to do with *mechanisms*. How, or in virtue of what, do new learning spaces have the effects they do? Under what conditions will the impact of new learning spaces be enhanced or mitigated?

This chapter describes research into one potential mechanism through which new learning spaces may influence teaching and learning, namely, changes in interpersonal classroom relationships. Amedeo, Golledge, and Stimson (2009) theorized that space "exerts significant influences on [human activity and experiencing] through complex and intricate relationships" (12). We hypothesize that newly designed classrooms can alter in-class dynamics in two basic ways: first, by breaking down the hierarchies that divide teachers and learners in traditional learning spaces, and second, by fostering greater affinity among students. To put the point differently, new learning spaces can facilitate *educational alliances* between students and instructors and among students, *relationships* that help to improve both the student learning experience and the learning outcomes that students achieve.

The research described here is preliminary in the sense that it draws on both existing and new data on learning spaces. We argue that these data are consistent with, and generally supportive of, the existence of an association between newly designed classrooms and classroom alliances, and we map future directions for this line of research that center on the development and application of direct, validated measures of educational alliance.

Data and Methods

To conduct this study, we needed a conceptual framework that would systematize our investigation of classroom relationships, focusing on the aspects of those relationships that are educationally crucial. We located such a framework in the notion of the *educational alliance.*

The concept of interpersonal alliances was originally brought forward in the field of psychotherapy (Bordin 1979) and later adapted to the context of the college classroom (Billson and Tiberius 1991; Meyers 2008; Tiberius and Billson 1991). The focus on alliance is built on the general proposition that the social context in which teaching and learning takes place can affect, either positively or negatively, student academic and developmental outcomes. Several decades of educational theory and empirical evidence support this proposition, suggesting that such factors as student involvement in academic life, substantive student contact with faculty and with peers, faculty enthusiasm and expressiveness, reciprocity among students, and a cooperative classroom context can improve student motivation, achievement, and persistence (Chickering and Gamson 1991; Endo and Harpel 1982; Pascarella and Terenzini 2005; Tiberius 1993–1994; Tiberius and Billson 1991; Tinto 1997).

In this study, we adopted Tiberius and Billson's (1991) conception of the educational alliance in relatively intact form. In their examination of the social context of teaching and learning, Tiberius and Billson considered several prominent empirical-theoretical perspectives on education in an effort to identify the specific aspects of the educational context that are crucial to establishing mutually reinforcing social bonds in the classroom. They concluded that the key features of educational alliance are as follows:

1. mutual respect,
2. shared responsibility for learning,
3. effective communication and feedback,
4. cooperation, and
5. trust and security.

While Tiberius and Billson (1991) focused primarily on the social arrangements *between students and teachers*, however, we believe that the concept of alliance can be usefully extended to include relationships *among students,* particularly in learning spaces like the active learning classrooms

(ALCs), in which evidence from past studies strongly suggests that the student-student social dynamic is powerful (Walker, Brooks, and Baepler 2011).

The data used in this study were gathered from students and faculty at the University of Minnesota between 2008 and 2012 using the following methods:

- Large-scale student and faculty surveys conducted in fall 2008, spring 2011, and spring 2012 ($n = 2,060$).
- Eight semistructured interviews with faculty who taught in ALCs in spring 2012.
- A faculty focus group conducted in spring 2012.
- A student focus group conducted in spring 2012.

Survey data derive from both closed and open-ended questions; the survey instruments were validated and tested for reliability.[1] Our process for utilizing the data began with examining our data-collection tools to locate questions the answers to which might bear, negatively or positively, on the hypothesis that a class's being taught in an ALC promotes one or more of the five features of educational alliance. Two researchers then examined the data identified in this way and collaboratively aligned the data points with the most closely associated features of educational alliance.

Findings

Using the process described above, we found many indications from multiple data sources that the ALCs do indeed conduce to the development of alliances between students and instructors, and among students themselves. And we found very few indications to the contrary. Overall, this investigation contributes to the theory of educational alliances, suggesting that new learning spaces designed to enhance group interaction might signal a new social context and alter classroom conduct.

Dimension 1: Mutual Respect.   In their landmark report *How People Learn*, Bransford, Brown, and Cocking (2000) described the importance of creating a learning environment that is "community centered" (144) and in which the classroom forms a community. Chickering and Gamson (1991) also encouraged both formal and informal contact between instructor and students as a good practice in higher education, suggesting that such interaction "enhances students' intellectual commitment" (65). The educational alliance codifies these principles under the dimension of establishing mutual respect, and we provide evidence to show that the ALCs foster mutual respect by creating a classroom environment that is *informal*, *relaxed*, and *egalitarian*.

Informality, Intimacy, and Immediacy.   By design, the ALCs do not project an obvious front-to-back hierarchy. Typically, the instructor's podium is somewhere in the middle, and students may naturally pass near

it when they enter or leave the class. Combined with easier access to any seat in the room, this feature creates opportunities for impromptu conversations. One instructor commented, "There was definitely more of an intimacy with the tables, a little bit more pre-class chatter, where [before] I was kind of behind this big, huge podium in the traditional class." Another instructor who criticized one ALC for locating the rostrum next to a wall put it, "I think for me a lot of the benefit of the classroom has to do with people seeing people, and I think this [locating the podium next to a wall] doesn't get at that really at all."

Sometimes making a large classroom seem smaller simply by interacting with students more closely and more frequently can change the dynamic. One instructor reasoned,

> I think it's maybe a peculiar function of the way human beings work but if we were, you know, this close, and nothing bad happened, and this happens often enough, I'd just feel more comfortable coming to your office and talking to you or I'd be more comfortable saying something that has nothing to do with class or it's—you're kind of friends at this point. You've seen a lot of each other; they know my mannerisms, I know some of theirs.

In their 2005 research review, *How College Affects Students*, Pascarella and Terenzini reported that informal contact among students and between instructors and students plays a critical role in socialization on campus. The effect of these interactions "was manifest in intellectual outcomes as well as in changes in attitudes, values, aspirations, and a number of psychosocial characteristics" (613).

Student survey data from several different classes support the idea that the ALCs strengthen bonds and support among students. Students in the ALC sections of three classes agreed significantly more strongly than students in non-ALC sections of the same classes that their classroom helped them to develop connections with their instructor (see Table 3.1).

Relaxed Atmosphere.   One instructor remarked that it takes an extremely skilled lecturer to interact casually with students and even joke around with them from the podium of a lecture hall. For her, the ALC was

> much more like sitting around your living room talking with somebody and it just feels more informal; we're getting a lot of work done. It's not that we're goofing off in class; we're covering a lot of serious topics and students are uncovering a lot of content, but the fact that I can just walk among them … changes the way faculty and students look at each other I think.

By placing students in a position in which everyone can see, and be seen by, everyone else in the room, the ALCs seem to create a kind of psychological and emotional immediacy often lacking in traditional classrooms. This dynamic can foster respect among students of the sort

Table 3.1. Student Survey Responses to Connections with Instructor

The classroom in which I am taking this course helps me to…

Question	Course	Classroom	Mean	Standard Deviation	N	t Statistic
… develop connections with my instructor	PSTL 1135	Traditional	2.97	.627	34	−.857
		ALC	3.11	.758	35	
	BIOL 1003	Traditional	2.61	.715	163	−2.902**
		ALC	2.88	.791	101	
	CHEM 1061	Traditional	2.36	.734	209	−6.344***
		ALC	2.80	.706	220	

Note: Questions were answered using a four-point Likert scale in which *strongly agree* = 4 and *strongly disagree* = 1.
**$p < .01$, ***$p < .001$.

observed by one instructor in a class that dealt with difficult, emotionally charged issues of gender and sex:

> I think [the students] are very respectful to each other … and even when things [become tense] … the women were, like, they were really directing it right at him and he had to deal with their anger and their affect coming at his direction and … you can see each other, right, in a different way and I think that mattered and that matters."

Egalitarianism.   The disruption of the traditional spatial hierarchy fosters new opportunities for conversations. One professor noted, "I like the fact that I can be anywhere in the classroom, nobody feels that they're in a segregated spot compared to another spot. I think that's valuable." Another instructor reframed the challenge her class faced in hearing one another as an opportunity to coach mutual respect, "I can acknowledge … how incredibly difficult it is to listen to one person in that large group, but how important it is, and how we have to kind of all make this sort of pact, you know, that we're going to respect our peers and me when we're talking."

Two survey questions delivered in 2012 provided information relevant to the matter of mutual respect. One question asked students whether their classroom helped them to "understand someone else's views by imagining how an issue looks from his or her perspective"; the other asked whether their classroom assisted them in "growing comfortable working with people from other cultures." Students in a large, ALC-taught section of introductory chemistry agreed significantly more strongly with both propositions than students in a near-identical section of the same class taught in a traditional room (see Table 3.2).

Dimension 2: Shared Responsibility for Learning.   The idea that learners bear some responsibility for their own learning is a crucial part of moving away from the metaphor of learning in which the learner is a

Table 3.2. 2012 Student Survey Responses to Questions Aligned with Mutual Respect

The classroom in which I am taking this course helps me to...

Question	Course	Classroom	Mean	Standard Deviation	N	t Statistic
...understand someone else's views...	CHEM 1061	Traditional	2.34	.668	208	−7.130***
		ALC	2.80	.681	218	
...grow comfortable working with people from other cultures	CHEM 1061	Traditional	2.36	.701	209	−8.324***
		ALC	2.91	.664	219	

Note: Questions were answered using a four-point Likert scale in which *strongly agree* = 4 and *strongly disagree* = 1.
***$p < .001$.

vessel into which knowledge is poured. As Billson and Tiberius (1991) wrote, "Making the shift from being a passive learner to an active one depends in large part on one's increasing willingness to accept shared responsibility for one's own educational experience" (92). The ALCs facilitate this process both by encouraging active, group-centered teaching-learning methods and by placing students in a situation in which they are accountable to their peers at least as much as to the instructor. The evidence in this section is organized around the notions of *interdependence* and the *reduction of passivity*.

Mutual Interdependence and Accountability. Several instructors de-scribed instances when students called upon each other to change their behavior, effectively asserting control over the flow of events in the class-room. For instance, it is not uncommon for students in the larger ALCs to ask students to repeat comments into the microphone so that everyone could hear what someone was saying, despite the fact that many students are reluctant to broadcast their voice. One instructor noted, "In the ALC, they definitely were more in control of what was happening in the class-room... I mean, I wasn't even part of it."

Some instructors encourage this type of response by listing what good group members do, such as learn each other's names, exchange contact in-formation, and arrive to class on time. The focus of responsibility shifts somewhat from the teacher-student relationship to one among peers. The group matters more than the individual. As one instructor put it, "I would say, you know, to the extent they're forced to do things; they're not forced to do them in response to me so much as to their peers."

In fact, leadership in groups in the ALCs can be so diffused that it is difficult to detect from the outside. One instructor commented, "[more] leaders emerged in the traditional room than maybe I saw in the ALC. Like

I had whole tables where I could not have told you who the definitive leader was, because they were all talking."

Diluting Passivity.   The nonhierarchical layout of the ALCs appears to block a dynamic that is common in lecture halls, in which students who are inclined to be passive and want to avoid responsibility for their own learning gather in certain parts of the classroom—usually in the back. In the view of one instructor, the ALCs disrupt this arrangement in a useful way:

> I feel different because it's a friendlier environment because I'm not thinking that the nerds are in the front and the people in the back don't care. There are people who don't care but they're sprinkled in with other people and they're everywhere.

One instructor described the difference in striking terms, saying that in the ALCs,

> I wouldn't be looking at a *passive-aggressive gradient* [emphasis added] ....
> there is a gradient in the room and you feel like you're working against that ...
> perception that they want to be anonymous in the back ... And what's really different is that there is no back row so students are around the tables and I have no preconceived notion ... of what their level of engagement is based on where they're sitting."

Dimension 3: Effective Communication and Feedback.   Chickering and Gamson (1991) underlined the importance of developing strong communication between students and instructors as well as giving students prompt feedback on their performance. The educational alliance framework adopts these principles as a single key feature, and many aspects of the ALC design promote effective communication and feedback, in particular *proximity*, *new lines of communication,* the use of appropriate *technology*, and the promotion of *higher quality communication*.

Physical Proximity.   For instance, because circular tables are substituted for rows of fixed seats and aisles, instructors are able to move through the room and stand next to any student. One instructor commented, "If you feel like you need to connect with your students then you have to be moving around," and the open design of the ALCs allows an instructor to weave through the classroom to consult with groups of students and comment on their work.

New Avenues for Communication.   The ALCs appear to foster multiple channels of communication, including productive conversations among students rather than just between instructor and students. One instructor said,

> Typically, in the traditional room, everything's got to be fed through me ....
> [In the ALCs] They were having dialogs with their peers ... there'd be times

when I was nowhere in the line of sight of groups of students who were communicating with each other [using the table microphones], which was awesome.

This manner of conducting class puts a primacy on communication and feedback, and the same seating pattern that makes group work easy—using numbered round tables—also makes it simple to manage. As one teacher explained,

So I have three different ways I can call on someone; either by the whole table, by a pod of three within a table, or I can spy a name card and say, hey "Joe," what did your pod decide?

As another instructor put it,

I have always tried to figure out a way that I could somehow get more feedback from the class, what have you really gotten out of this; what have you been following, not following. And so I think the active learning classroom has facilitated the ability to get more student feedback to me about what they think, what's their response to a problem. Would it be as easy to do that in a traditional classroom? It wouldn't be as easy.

Technology and Physical Features.   The ALCs' technology also seems to aid communication. Because each table has its own whiteboard widescreen monitor next to it, some instructors asked students to display their work. One teacher required every table to draw a concept map of a particularly vexing process, saying, "I want to see what you've been thinking about." The same instructor would use manipulables, asking students to create models of cell structures. She mentioned that the ability to do this in class was due to the simple function of "having space on the table to lay things out." This tabletop space allowed students to demonstrate their knowledge in a manner that could be easily scanned by the instructor, giving her a sense for how students conceived of the material and allowing her to adjust her remarks accordingly.

Higher Quality of Communication.   Several instructors mentioned that when teaching in the ALCs, they often felt like they lost control of some aspects of the class, because students asked quite different questions from the ones they expected to receive, possibly because the questions had been preprocessed in small group discussions. This change meant that there was "less scriptedness" and that "you have to respond and be ready in a different way, kind of be on the balls of your feet." "Get ready not to know everything," is the way one teacher put it.

They would ask more sophisticated questions. And it could be because in a group of three to nine people, they really quickly established what they knew

already. They wouldn't waste the whole class's time. They'd figure it out on their own, in their groups, and then the questions they asked me were like … I was totally unprepared for them.

This change in the quality of communication will again become relevant in the Trust and Security dimension mentioned below.

Dimension 4: Cooperation.   Overwhelming empirical evidence, particularly since the 1970s, has demonstrated that among college-age students, cooperative learning promotes higher individual achievement than competitive or individualistic learning (Johnson, Johnson, and Smith 2007). While instructors have long called upon students to cooperate on projects and assignments, the physical configuration of the ALCs, in particular the round tables, is designed to facilitate just this sort of pedagogy. The evidence in this section bears on the ALCs' tendency to foster *cooperative educational practices* and *bonding and support* among students.

Cooperative Teaching-Learning Practices.   A chemistry instructor commented, "It's good to have the right configuration of the room, but it's also really good to sort of force people to take on roles that meet the intent of the [ALC]." This understanding of the space convinced the professor to assign seating in the classroom even before the first day of class began. This allowed him to define nine roles for examining professional articles:

> If your seat letter is this, you're expected to be doing this and then it rotates as we go through papers, and, you know, that has worked particularly well because nobody at the table gets to just sit there and listen passively.

The process worked so well, in fact, that one day in midsemester, when the professor was unforeseeably late to class by five minutes, the groups had already started reviewing the week's articles when he arrived. The same instructor, however, lamented the behavior he saw in an experimental group midterm. Students divided the content ahead of the exam and specialized in singular areas, which resulted in individual students knowing narrow spectrums of the material deeply and, perhaps, lacking a broader understanding.

Other instructors would take advantage of the table groupings to engage in constructive controversies. Teams of students would engage a task and compete against another. For instance, in a gender and sexuality studies course, debates were assigned:

> We used the class time to plan what they were going to say and they could project their documents on their individual table projector systems and each work on their own component. They could also walk over to the other tables and share; so an argument could share with a counter argument because they could be at tables next to each other. So the physical space of the room is perfect for doing things like debates where they're all working on different components but that are interrelated so that they want to share materials.

Table 3.3. Student Survey Responses to a Question Regarding Bonds between Students

The classroom in which I am taking this course helps me to . . .

Question	Course	Classroom	Mean	Standard Deviation	N	t Statistic
. . . develop connections with my classmates	PSTL 1135	Traditional	3.15	.657	34	−2.137*
		ALC	3.49	.658	35	
	BIOL 1003	Traditional	2.91	.734	162	−5.242***
		ALC	3.38	.630	101	
	CHEM 1061	Traditional	2.32	.690	210	−12.073***
		ALC	3.10	.657	220	

Note: Questions were answered using a four-point Likert scale in which *strongly agree* = 4 and *strongly disagree* = 1.
*p<.05, ***p < .001.

Student Bonding and Support.   These comments by faculty were echoed by students. In one of our focus groups, there was universal agreement that the ALCs fostered greater bonding among students, a sense that students were all in it together. One student summed it up: "I think the group setting helped us create good friendships. I still talk to a couple of the people from that class." The sense of mutual support created by the round tables was a focus of comments by students in our student surveys: "It was great having a group of nine kids to whom I could always utilize in my time of need to bounce ideas off of." Instructors also observed the development of connections among students: "[The ALC] changes the kind of nuanced ways people connect to each other. So they respond to each other differently and . . . I think there is that different sense of community that affects experience with relation to each other."

Finally, student survey data from several classes support the idea that the ALCs strengthen bonds and support among students. Students in the ALC sections of three different classes agreed significantly more strongly than students in non-ALC sections of the same classes that their classroom helped them to develop connections with their classmates (see Table 3.3). Similar results emerged by an analysis of survey responses from students in a large chemistry course taught in 2012 in an ALC, with respect to the issue whether their classroom helped them to develop confidence working in small groups (see Table 3.4).

Dimension 5: Trust and Security.   Creating a safe learning environment in which students feel able to express their views freely is crucial to maintaining active student engagement in the learning process. An unsafe classroom atmosphere will cause self-censoring and the preemptive stifling of student participation, reducing both the amount of processing students engage in and the quality and quantity of feedback they receive. We found that the ALCs foster, in the words of one instructor, "a safe climate [in

Table 3.4. Student Survey Responses to a Question about Working in Small Groups of Students

The classroom in which I am taking this course helps me to . . .

Question	Course	Classroom	Mean	Standard Deviation	N	t Statistic
. . . develop confidence working in small groups.	CHEM 1061	Traditional	2.17	.768	210	−14.925***
		ALC	3.18	.626	221	

Note: Question was answered using a four-point Likert scale in which *strongly agree* = 4 and *strongly disagree* = 1.
***$p < .001$.

which] students . . . feel more comfortable about displaying either ignorance or knowledge." However, the evidence in support of this feature of educational alliance is weaker than the evidence for the other four features. It comes in the form of changed classroom dynamics including a *gradual immersion* in class material, making space for *being wrong*, and a tendency toward *disruption and surveillance* in the classroom.

Gradual Immersion.   Because the round tables and movable chairs make small conversations feel natural, the ALCs can also help scaffold more initially uncomfortable material. In a zoology class that focuses on sex, for instance, the instructor intentionally worked up to topics like infanticide or disproportionate murder ratios in men over women.

> We had some really good conversations about some really, really tricky material in the ALC. And I like to think that—or it's easy for me to think that it's because they were comfortable with the talking they'd already done in their small groups.

Another instructor in a gender studies course mentioned that when talking about rape, she did not want to have her back to anyone in the room. She purposefully situated herself in the corner of a room with a microphone so she could watch facial expressions, and then she gradually moved toward the center of the room.

> It actually, I think, still allowed this feeling of intimacy even though I had removed myself from the center . . . I circle the table in the middle and I walk towards certain tables and off to other tables, [and it] allows them to kind of feel like I'm there with them in a way that I think is closer and much more like a smaller room experience, almost like a discussion section at times.

Being Wrong.   The ALCs introduce a classroom dynamic in which students often ask questions that are more sophisticated and more probing than the typical question in a traditional room. While this situation can be uncomfortable for teachers new to the ALCs, it also provides an

opportunity to model the process of professional academic inquiry for students in which being wrong is not only acceptable but also an expected part of the knowledge-creation enterprise. As one instructor said,

> We're all doing this together and ... they do ask questions that I don't know the answer to and ... it feels much more comfortable to say, that is a really good, probing question and there's probably someone who has done some research on that. [It's not that] you just embarrassed me by asking me something I didn't know the answer to. We're exploring this together and I think it's kind of cool that you asked something that I don't know the answer to.

Disruption and Surveillance.   At times, the lack of a physical center of focus in the room and the disorder that stems from exploratory activities can create a bit of chaos, and an instructor needs to learn how to work with that. That disruptions may occur more frequently as instructors modulate between group activities and microlectures suggests that the room may not inherently foster a sense of security without guidance.

The challenge, then, becomes reestablishing order and using the properties of the space to maintain a strong learning environment. For instance, the fact that students do not all face in a single direction with their backs to each other changes the dynamic. "Nobody ever falls asleep in this class because they're in the panopticon," one instructor commented, referencing Jeremy Bentham's term for a building that encourages self-surveillance.

> In a panopticon, everybody can see them. I can see them. So there is that sense that the surveillance level is different than in a lecture hall where there is a more passive role that they assume ... there's much more of a sense that their peers are all paying attention, we're all paying attention, she can see me, we're engaged.

Safety and trust, in this regard, are borne out of establishing what Billson and Tiberius (1991) termed new "group norms" and become "self-reinforcing," particularly when recognized by students and encouraged by the instructor.

Conclusion

On the basis of existing evidence, we conclude that ALCs tend to change the social context of classes taught in these rooms in constructive ways. In particular, ALCs are well suited for fostering educational alliances between instructors and students, and among students themselves. Although the comparative evidence is scant, we also conclude that ALCs are likely to provide better support for educational alliances than traditional classrooms. The ALCs, however, are not a magical solution; they must be used well in order to bring about their good effects (see, for example, Chapter 5), and

their structure has the potential for its own disruptions of classroom relationships, such as disruption and the sense of surveillance described in the previous section.

It should be emphasized again that our conclusions are only provisional, because they are based on a secondary analysis of both existing and new data, rather than on data collected for the express purpose of assessing social contexts in different types of classrooms. The next step, therefore, is to develop a valid and reliable measure for measuring educational alliances in the classroom and to apply it within a research design that will allow us to draw comparative conclusions (Tichenor and Hill 1989). We have begun this process with a field trial of a draft instrument designed to measure educational alliances. We also plan further data gathering through faculty interviews and student focus groups that will center directly on the notion of classroom social context.

The instigation of this line of inquiry stemmed from instructors' observations about the changed nature of social relations in the active learning classrooms. Should our provisional findings hold true upon further measurement and analysis, we foresee the ability to design faculty development recommendations to assist instructors and students. As the social context of teaching and learning changes within these new spaces, we need to reorient not only our pedagogical approach but also the social arrangements under which learning happens.

Note

1. The data collection instruments used in this study can be found online at http://z.umn.edu/lsr.

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PAUL BAEPLER is part of the research and evaluation team in Information Technology at the University of Minnesota.

J. D. WALKER is part of the research and evaluation team in Information Technology at the University of Minnesota.