

WHAT WORKS - STORIES FROM THE COMMUNITY

PLANNING SPACES FOR SCIENCE AT DICKINSON COLLEGE

Jeanne L. Narum: Thanks for your time. Stories from the community are an important vehicle by which PKAL can spotlight *what works* and why— offering lessons learned to serve the broader community. To set the context for a discussion about your new spaces for undergraduate science (STEM), describe the general process for planning spaces for science at Dickinson.

Walter Chromiak: First of all, we start with some reasonably informal processes, meeting with faculty and collecting information about the current spaces they use for learning, teaching, and research. Next we explore how other institutions, some like us and some not, planned various sorts of spaces for learning.

Finally, we move to developing formal faculty planning groups, appointing a project shepherd, and doing all the hard work that must take place as a prelude to seeking design, lab, and construction professionals.

Narum: Why were these new spaces needed now?

Chromiak: These are spaces for the biology, chemistry and psychology departments. The current biology and chemistry buildings were over 50 years old, so it has been sometime since those disciplines have had up-to-date spaces for research and teaching. Of course, over the years we've done our best to maintain the infrastructure, but there comes a point when, no matter how good your maintenance is, new spaces are needed because of the drastic changes in how science is learned and practiced and in the tools that serve research and learning in science fields.

One issue that surfaced in our informal and formal planning processes was that these three disciplines were becoming more interdependent, more interdisciplinary. We found this out in a couple of ways. First, our students are always at the vanguard of such new directions, in part because of the way our curriculum is designed.



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As a liberal arts institution, it has been important to us that introductory science courses not only serve as a conduit for majors into a discipline, but they also ensure that all Dickinson graduates, no matter their major know how science works. We want our students to actually participated in creating some version of science, no matter how rudimentary.

To make this happen, our science departments have begun to refocus at the introductory level on topics courses rather than on general introductory courses. For example, in the 1990's the psychology department decided to go strictly to topics courses at the introductory level, offering a series of different courses that faculty would teach, from social psychology, to child development, to perception memory and thinking, to the biological basis of behavior.

In the early 2000's, the biology department did something similar, creating a spectrum of introductory level courses that focus on topics like understanding how cancer moves through the body, or understanding "alien worlds," where you are looking at life in extreme circumstances.

So, now when a student is taking an introductory course on "The Biology of Behavior" and then one in psychology on "Brain and Behavior," they begin to see interconnections among the disciplines. Students are then often motivated to take additional courses in both departments and in some cases even to design specialized majors that allow them to explore these disciplines in greater depth as interdependent disciplines.

Narum: How were you tracking these new interests of students?



Chromiak: We've had a faculty science executive committee for many years, which meets monthly to reflect on, coordinate, and dream about the future of sciences at Dickinson.

This was a good opportunity for discussions about how the students were becoming shared majors between departments.

Narum: Did you talk both about what students learn and how students learn shape the way you thought about your new spaces?

Chromiak: There has been significant pedagogical experimentation in our science departments, going back to workshop physics more than twenty years ago. Priscilla Laws was a national leader in focusing on exactly what it is that students were doing in the classroom and how that might affect their ability to learn physics.

More recent pedagogical changes in psychology and biology resulted from similar concerns and have led to similar outcomes. Our biology department, for instance, has restructured not only their introductory courses but also the physical spaces, enabling students to interact and to have more hands-on learning opportunities.

They knew space matters. Not that lectures are necessarily bad; they have a place. But the place is not for fifty minutes every class period during the course of the semester.

The new introductory classes in biology tend to be organized in what the faculty call pods. Four students, working as a team at six-sided tables, with a computer. So always when we think about spaces, we are thinking about facilitating interactions—before, during, and after the class, with fellow students and with faculty.

Narum: We talk about in PKAL the importance of creating sandboxes—intellectual, curricular, or physical. In the process of your ten years of planning new spaces for science at Dickinson, and the adapting you've done in that time, might we say you've engaged in a decade of sandboxing?

Chromiak: Yes. As you know Dickinson is a very collegial institution so one thing that happens is when our faculty see success in whatever area, whether it's in their own disciplines or in another discipline, they talk together about *what works* and these conversations tend to trigger experimentation.



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Faculty ask for help to adapt in their classes what is succeeding in the classroom of colleagues, and this faculty-to-faculty interaction has been very important on our campus. As for learning spaces, sometimes what needs to be done is a fairly straight forward change, such as making sure the tables and chairs move; other times it has meant redesigning the entire space.

Narum: The concept of sandboxing seems of increasing importance, because experimenting with the space/pedagogy/content relationship can be of great value for campuses at the beginning stages of planning.

This is a good approach for thinking through modest, non-permanent and not too costly adjustments to their current space in the process of planning new spaces.

Dusty Rhoads: One thing that Dickinson did well was that the whole process was extremely transparent from the very beginning. The whole design team always met with the building committee which was comprised of faculty, students, and facilities people.

We met with the provost and the president of the college regularly, and with the board of trustees as a part of their quarterly meeting. It is very unusual for design professionals to meet with the provost and the president every single time you are on campus, and equally unusual to meet with the board of trustees.

Intermittently we met with other faculty and student groups; the idea for planning was the idea of sharing. Shaping the vision for the new spaces was a very, very social experience for the entire community.

Narum: Talk about the people at the table. How your students were involved in the planning process?

Chromiak: We did some things informally early on (stealing ideas from PKAL materials and conferences). One was to give cameras to students and have them go and take pictures of spaces around campus that work for them as spaces for learning and spaces that do not.

Over the years all departments have had conversations, informal in many cases, with students about things that were working well or not in particular classes.

Given our liberal arts mission, such student and faculty interactions are always taking place, and we have found such conversations one way to get information from students that we could incorporate into our planning processes.

We also had formal departmental student representatives who met with the architects, both formally and informally. We took care not to pick majors about to graduate because they would not be around for all planning.

Instead, we invited beginning students (even not-yet declared majors) who could take part in our planning.

Narum: Talk some about the interactions with the architects—beginning and throughout the process.

Chromiak: The architects came in after we had an outline of the program to be accommodated in the new spaces, but it was essentially only the beginning of programming. But it was critical to us that we have architects that listened and helped us rather than architects who came with preconceptions of what we (or for that matter) they wanted.

Narum: Sometimes I receive calls from unhappy faculty clients who felt their architect was saying “this is the way it should be done,” rather than attending to their dreams.

How do you nurture a good client/architect relationship? What are the key factors in this from both the client and architect perspective?

Rhoads: The perspective of architects should be that the client knows its institution and culture much better than we do. Architects do have insights from their work on many campuses, but one of the guiding principles of Zimmer Gunsul Frasca is that we try to be very good listeners.

There are many internal conversations within the ZGF office about listening for information— about both the quantitative and qualitative aspects of the culture.

It is important to make the first visit to the campus, as a member of the team, with an open mind. The reality is that this is the beginning of a relatively long-term relationship, most likely at least five years under normal circumstances.



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So the beginning is about building the relationship, developing a trust, and learning to listen and to communicate. A different way of sandboxing, I might say.

Narum: One of PKAL's mantras is that 'community' is both the process and the product of the planning.

Rhoads: From the architect's perspective, community is critical. We like to have those who are going to make decisions at the table all of the time because, in the long process, many hard decisions will have to be made that must be collective decisions.

Then, when tough cuts have to be made late in the process, everyone has ownership of earlier decisions and it is much easier when everyone has been on the same page.

Chromiak: I agree. All affected parts of the community must have some voice. Of course, it is physically difficult to have everyone there all the time, but there should be an understanding that departmental representatives speak for and to their colleagues, about their various concerns and dreams.

On specific issues, we made certain that those concerned or experienced with that issue were at the table. Let me reemphasize that listening is essential to community-building at all stages.

For instance, in the process of selecting an architect, 'look and listen'; in the interviews it becomes clear who is making boiler plate presentations, who has read your materials carefully, and who seems to be the best listener.

Narum: How did you think about the future— new technology, new pedagogy, new science— in the long process of planning?

Chromiak: We asked about the future a good bit. In our thinking

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about technology, we wanted to get the basics right, to be able to take advantage of emerging technologies, to lay the groundwork for the future as opposed to trying to guess what magic will happen tomorrow.

We were trying to be good stewards, realizing the building we were now planning would serve for more than fifty years and thus that its bones would need to be able to adjust over time. We also looked at where science is going, to ensure that the infrastructure would also serve for the long-term.

Narum: It is striking to note the increasing mention of 'interdisciplinary' when people are talking about the future of science and spaces for science, an idea rarely present in PKAL facilities planning conversations in the early 1990's.

Rhoads: Interdisciplinary was one reason the new spaces were to be attached to an existing science building, so to promote all kinds of intellectual collisions between the various disciplines, as well as to engage non-science people in considering science as a central liberal art.

We will still have chemistry labs; we will still have biology labs, but in space planning, the strategy today is to be flexible so that both disciplinary and interdisciplinary initiatives are well-served.

Narum: Many conversations (sometimes disputative) surface within PKAL about relative advantages of adjacencies between faculty offices and faculty research labs— whether adjacencies that might enhance disciplinary research now would impede the development of interdisciplinary programs in the future.

Rhoads: We addressed that issue by using the 'confetti' approach to developing adjacencies. We spread and sprinkled faculty offices and laboratory spaces around the building.

Biologists are next to chemists in terms of their offices, with interaction spaces directly in front of offices where their students meet and mingle. This enhances cross-conversations between students that were already happening and will advance further interdisciplinary connections.



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However, if the trend went the other way in the future, this does not mean that the building would not work. At this time, Dickinson wants to organize spaces to encourage interactions of faculty and students, across boundaries of disciplines, of educational level, major/non-major students.



Chromiak: We talked a lot about this. One of the things we agreed on was not to force a particular arrangement on anyone. We were careful to look for models that might help us understand how ‘interdisciplinarity’ works now, tapping into resources available through our board of trustees.

Some of our trustees are in the pharmaceutical industry and they made it possible for us to visit industrial labs, and these visits were an opportunity for our faculty to imagine new ways of collaborating in the future. We tried to meet present needs while planning to allow new areas to develop and blossom as they emerge in the future.

This is something we have done reasonably well. We have thought very carefully about how to align people and to make it visually clear that there would be no disciplinary-specific boundaries in any area of the building, but we did not simply randomly sprinkle folks throughout the spaces. We sought that happy medium between serving the present and future.

Again, our vision is of spaces where students and faculty from all the various disciplines can meet and work with one another and the challenge in doing that was that we were linking existing (Tome— home of math & computer science, physics and astronomy) and new spaces for biology, chemistry, and psychology; we were not starting with a blank slate.

Narum: From the architect’s perspective, how did you deal with this challenge?

Rhoads: First, we took advantage of existing connections. We were aiming for developing a “social heart” that would serve not only the sciences, but the larger campus community. The campus is not very large, thus traffic patterns are very negotiable.

Starting out, the biology department will be split in half— some faculty will be in the new building and others are to remain in the existing building across the street. So there needs to be connectivity or at least convenience since the whole department will no longer be in the same space. We have a vivarium in the basement of the building that is going to be shared by faculty housed in both the new and the existing buildings.

Narum: Any lessons learned, or advice you would give to coming generations of planners of learning spaces for undergraduate STEM?

Chromiak: Let me respond by talking about sustainability. The Dickinson community was committed to sustainability from the beginning.

We are working toward LEED certification at the silver level. Believe it or not, one of the first planning meetings our science faculty had, back in 2001, was about sustainability. The faculty from the biology, chemistry, and psychology departments sat down and went through a presentation on what it would take to meet sustainability requirements for LEED certification.

Everybody agreed that sustainability is a goal that should be central to the project. This is both the right thing and the smart thing to do. Not only colleges are wrestling with such issues, I read many stories in the *Wall Street Journal* about how industry and businesses of all sorts are coming to see that it pays to be smart and build in a sustainable way. Since sustainability is also an institutional value at Dickinson, it was easy to make it a central project goal.

Rhoads: I would like to emphasize again the point made earlier about the transparency of the process at every stage.

There was no mid-point change of course, ‘drive-by shooting,’ because someone who had not been integral in the planning from the beginning suddenly had an ‘aha’ idea. This reality changed the whole project— it was incredible.



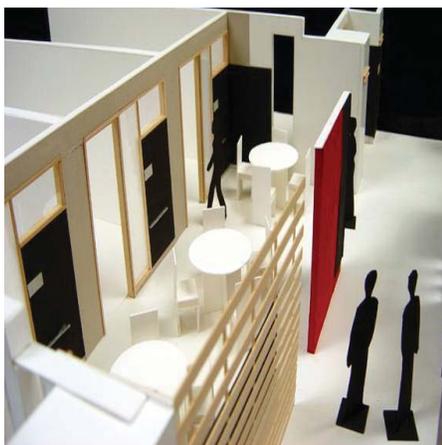
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Chromiak: The transparency and collegiality, for me, is an interesting perspective on lessons learned, because it seems so natural. This is simply the way we operate at Dickinson.

Narum: At the end of the project, what will be the ‘sense’ of the building when one first walks into it??

Rhoads: Two things. First, it is going to be very colorful, with an energy about it that is different from other Dickinson buildings. Second, there will be a very social aspect to the spaces. Both were intentional planning goals.



The new spaces are designed to serve people in groups large and small, formal and informal, in offices, learning spaces, research spaces, meeting spaces.

The social spaces provide a glimpse into the research lab so that students can actually see science happening real time; for example, the human performance lab is right off of the spine of the building, thus all can see the ‘testing on the treadmill’ exercises underway.

Hopefully this will lead more students into the ‘science net,’ if you will, as they come to see that interesting things happen in learning science and that they can share in and be a part of those experiences.

Chromiak: I agree. Making science as public as we possibly can in these new spaces was a goal. When you walk into the building, you will see science on display. The Dickinson community calls itself a community of inquiry and we have a strong track record of student and faculty research.

When students see science on display we hope it will intrigue them and also encourage them to consider how they might do science themselves. It also signals the quality and character of the sciences on our campus.

Narum: Walt, you were at the PKAL Facilities Planning Workshop in Wisconsin several years ago, weren't you? Do you remember the eloquent definition of elegant spaces for science that emerged in the final session?

Chromiak: Yes. It was that:

‘...spaces should be agile and adaptable, able to bring delight to the lives of those they touch— just like we want our graduates to be.’ That is our goal also. ■