

Engaging Honors Students in Purposeful Planning Through a Concept Mapping Assignment

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INTRODUCTION

In Larry Clark's monograph chapter on the education of academically talented college students, he challenged honors educators to consider our role in helping students find their path, particularly through the addition of self-reflection and exploratory projects in honors courses. He noted, "Our first effort should be directed toward helping students learn what paths will be most satisfying in their lives in relationship to their other desires, involvements, and commitments" (84). Despite little available research available on what defines an honors student, we know from experience that honors students tend to be eager and exploratory (Achterberg) as well as willing to take intellectual risks (Slavin). From an academic advising perspective, honors students tend to have complex academic needs, high expectations and goals, and a strong interest in postgraduate educational opportunities (Schuman). In an honors first-year experience (FYE) course for science, technology, engineering, and math (STEM) majors at the University of Florida, one assignment was designed in particular to meet the special needs of honors students and to achieve Clark's goals. My perspective as instructor, along with the comments of two first-year students—Stephanie Podjed and Sean Taasan—who took the class in the fall 2012 semester, might serve as an illustration and model of "helping students find their path."

The honors FYE course for STEM majors is taught by an honors advisor with the assistance of two honors student leaders who are also STEM majors. This elective course introduces students to opportunities in the STEM fields that include research with faculty, internships, and global engagement while at the same time building skills in areas such as networking, interviewing, and résumé development. This one-credit course meets once a week for an hour but also includes a hybrid component where students complete online modules to prepare them for each week's class. The online modules provide a series of guides where students reflect on the previous week's topic, review background material for the next week's topic, and search for and discuss opportunities relevant to their interests. The course, limited to twenty-five students, enrolled twenty-four in the fall 2012 semester.

STUDENT INTERESTS AND EXPECTATIONS

STEPHANIE PODJED

Before I came to college, I knew I wanted to maintain the same degree of success I had achieved throughout my academic career, so keeping up grades as well as enrolling in classes that hold my interest and keep me on track to graduate were important to me. I also knew I wanted to study abroad as many times as I could.

As an honors freshman, I am already used to dealing with hard work and to thinking about my future ambitions, academic success, and ways to make myself stand out from the the crowd. I know fairly well what I want to get out of my time and education at the university as well as my plans after graduation already. Being an astronomy major, I would like one day to work with NASA, the European Space Agency, or another organization involved with advancing our knowledge of the universe.

I am debating if I want to double-major in physics since other astronomy majors and graduate students say that having the double major is almost a requirement to become involved in the astrophysical world. I also love languages and am considering minors in several languages. Since NASA has cut back their programs, using Russian probes and rockets when they need to, I think it would be smart to learn Russian in case I ever wind up there. I am part Italian, so I am interested in learning that language and culture, and I have loved the language and culture of France since I first took French in the sixth grade and started wanting to study there. Knowing a few languages will be helpful if I am doing research in other countries, and I have considered living or working in Europe after graduate school.

SEAN TAASAN

One of the most dramatic developments in the academic world in recent years is the shift towards a highly competitive system of advancement. Gone are the days when merely receiving a degree would serve as sufficient qualification for a job. Good grades have always been important, but the major source of differentiation between recent graduates now lies outside of the classroom. An increasing amount of value is being placed in extracurricular activities such as volunteering, shadowing, research, and leadership, thus putting pressure on undergraduates right from the start.

This pressure especially affects students intending to pursue a professional degree. Whereas the freshman year once offered a chance to explore activities around campus at a leisurely pace, today's emphasis on multifaceted applicants forces students to get actively involved right away. The clock is ticking from the moment one steps on campus, and time is a much more limited resource than the four years of undergraduate studies would imply. Essentially, the undergraduate experience has developed into a race to stay ahead of the curve.

As a current freshman with ambitions to attend medical school, I know how critical it is to get off to the right start with extracurricular activities. Advisors, teachers, admissions officers, parents, fellow students—all of them have stressed the importance of starting early to build a strong résumé, and I also want to pursue other activities, such as sports, for my own sake. Getting involved in all of these activities is much more complicated than I had realized. The transition from a fresh-faced new student to an active leader on campus does not happen overnight and can be a daunting task. The line between “active student” and “overworked, burned-out student” is a very fine one indeed.

CONCEPT MAPPING ASSIGNMENT

Knowing that many first-year honors students had interests and expectations similar to those of Stephanie and Sean, I incorporated a concept mapping assignment into the course to help students visualize and organize their plans for involvement. Concept maps traditionally help learners “to generate ideas, to design a complex structure, to communicate complex ideas, to aid learning by explicitly integrating new and old knowledge, and to assess understanding or diagnose misunderstanding” (Dykeman & Mackenzie 197).

For this assignment, students used themselves as the center of the concept map and generated ideas for involvement represented as various nodes on their map. Students completed three iterations of the map throughout the semester, during the third, ninth, and fourteenth weeks. Following each iteration, students opened their maps to peer review by classmates through online discussion forums. Students were placed in groups of four and given a week to review each other’s maps in the forum.

Students created their maps using Mind Meister <<http://www.mindmeister.com>>, an online mind-mapping software system. I chose Mind Meister because it had a limited free version and students could share their maps with their classmates and the instructor without opening their maps to the public. The online map could serve as a permanent resource for the students that they could revisit and revise even after the course had ended. The following sections include the concept map assignment instructions for each of the three iterations.

FIRST ITERATION INSTRUCTIONS (WEEK 3)

We will be working on a concept map this semester as a visual way to determine your action plan for involvement. The first step in creating our concept map is to brainstorm what it is we want to accomplish. Then we can work backwards to plan how we will accomplish everything—in a sense, creating a checklist. Following are the directions on creating a concept map:

- Create an account on Mind Meister. Mind Meister has a basic (free) account that allows you to create and share up to three concept maps.

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- Create a concept map using the tools provided by Mind Meister. Start with you in the center. Then branch out to all of the different categories of opportunities you want to consider while in college: research, internships, leadership, volunteer work, study abroad, summer programs, scholarships/awards, outside interests, work, etc.
- From there, you can start branching out into specifics IF you know them. What field of research? What country for study abroad? What leadership positions? Eventually you will start thinking about contacts, timeline, etc., and include those as links to your specifics. Your map should begin to look like a web.
- Once you have a comprehensive concept map, save it! Use the sharing feature to generate a URL for your map. Go to the share icon at the bottom left of the page. Publish. Check password protect and choose a password unique to this project. Click OK. Then copy the URL. You will then post your link and sharing password to the Concept Map A Forum.

SECOND ITERATION INSTRUCTIONS (WEEK 9)

- Review the concept map you created during Week 3. What new opportunities are you considering? Are there opportunities that were missing before? Are there opportunities you are no longer considering? Revise your concept map to reflect those changes.
- Now it's time to start getting specific. If you haven't done so, start adding contact information for each of your opportunities to your concept map, e.g. names, email addresses, phone numbers, websites, etc. For example, if you are considering research with a particular professor, include the professor's name, email address, office location, and lab website.
- Begin to prioritize these opportunities. Although you don't have to do anything specific to your concept map regarding priorities at this point, you will note priorities in the final iteration at the end of the semester.
- Share the link and sharing password to your concept map with your group members in the Concept Map B Forum. You will need to provide feedback on your group members' maps by next week. Make sure your feedback is specific and useful. Telling them it looks good is not helpful.

THIRD ITERATION INSTRUCTIONS (WEEK 14)

- Review your concept map last updated in Week 9. What new opportunities are you considering? Are there opportunities that are missing? Are there opportunities you are no longer considering? Revise your map to reflect those changes.

- Also consider adding a section on mentors and/or faculty and staff you want to develop relationships with throughout your time here since we just discussed mentoring in class. Include ways you will work on developing and maintaining relationships with those people.
- Go through and make your map as specific as possible. Make sure there is contact information for each of these opportunities—URL's, a contact person/email address or phone number if applicable.
- Also using whatever method makes the most sense to you, highlight which opportunities are priorities for you to target. Perhaps some opportunities are important to target your freshman year. Others are important for you to target as a junior or senior. Maybe others would just be nice to do if you have time.
- Share the link and sharing password to the concept map in the Concept Map C Forum. You will need to provide feedback to your group members by the end of this next week. Make sure your feedback is specific and useful. Telling them it looks good is nice, but not helpful.

CONCEPT MAP EXAMPLES

Stephanie and Sean describe below the content of their concept maps and also share a visual section of their maps as an example. Because the maps were so detailed, an entire concept map could not be reproduced for this article. In order to maintain the privacy of their assignments, the URL to their online concept maps could not be shared either.

STEPHANIE PODJED

In my concept map, I have ten major categories for goals I want to achieve and things I would like to do for fun. The categories regarding my ambitions, which I selected because of their importance to my college experience, include “academics,” “research,” “internships,” “study abroad,” “summer programs,” and “mentors/faculty/staff.” I believe that, in order to get the most out of a college education, one needs to maintain a high academic standing. Under my “academics” heading, I include “talk with advisors” since they can help me graduate with a major in astronomy, double major in physics, and any minor I decide to add. Also in this category, I have included “graduate with honors,” “make a 4.0,” and “make the president’s honor roll and dean’s list” because these are goals I want to achieve and I am used to being in the top of my class and earning straight A’s.

Under my “research” category, astronomy research is one of my top priorities, with physics and chemistry below that. I would like to get experience in the field of research for astronomy as soon as possible, so I have the names of certain Research Experiences for Undergraduates (REUs) and two professors at our university listed as resources. I include links to the websites of each

opportunity I am interested in and of the professors whose research I would like to pursue.

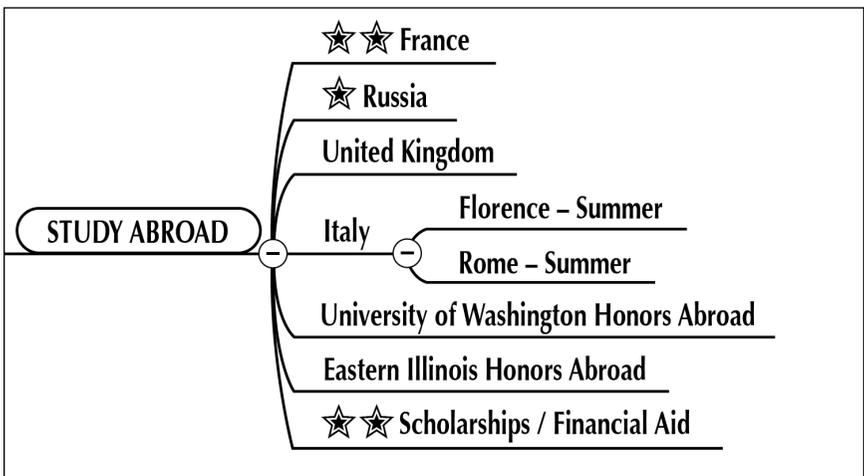
For my “internships” group, I have a link to the website of the Career Resource Center, which can help with résumés, give advice about applying for internships and jobs, and provide interview tips. I have also linked four areas of interest to which I would like to submit applications. These areas include the Space Telescope Science Institute, NASA, and the art museum on campus since I enjoy art along with the physical sciences and mathematics.

I have always wanted to visit Europe, especially France, so I included a “study abroad” category in my concept map (Figure 1). I have listed the top places where I would want to study, including France, Russia, the United Kingdom, and Italy. I have included the dates and links to websites for the programs that are offered through the university as well as a link to places where I can find scholarships and financial aid to help pay for these programs.

I included a heading for summer programs that include internships, research, and programs funded by the NSF or NASA. I include a Campus Crusade for Christ (CRU) Summer Project, which is an opportunity for me to go somewhere in the United States or abroad to do missionary work while growing in my faith, to which I am as dedicated as to academics.

Finally, I have the “mentors/faculty/staff” category for the professors with whom I would like to build a relationship and the ways I plan on doing that. I am interested in the astronomy research that four of the six people listed are doing, and I would like to learn from them about the astronomy major, help with their research if needed, and gain mentors in my major. To get to know all six faculty members, I plan to take more classes with them, go to their office hours, email them about opportunities, and just try to stay in contact.

Figure 1. Stephanie’s Study Abroad Section



The stars note top priorities.

While trying to accomplish my goals for achievement, I also want to have experiences that are fun and interesting, which I include in four major categories: “organizations,” “work/volunteer,” “sports,” and “explore the world.” I was actively involved in several clubs in high school, so I want to participate in some of the numerous organizations here on campus. In high school I volunteered at my local library. With my love of literature, art, and history, I have listed the campus museums and libraries under my “work/volunteer” category as places where I would like to volunteer. Also, I would not mind working at the campus bookstore.

I was not involved in sports in high school, but I would like to be more active, so I have a category for “sports” that includes intramurals and sports clubs that include tennis, soccer, volleyball, and fencing. Even if I do not join one of the teams, I would like to play with my friends for fun.

My last heading is “explore the world,” which pertains to what I want to do in the future and encompasses becoming fluent in many languages, studying abroad as frequently as I can, and possibly living in Europe after graduate school. I want to travel the world one day because I think it is important to know about other cultures, and I want to explore art, architecture, history, and people in many areas of the world.

SEAN TAASAN

When first creating my concept map, I designed a section for each of the most important aspects of my undergraduate career. My first section was “goals” so that I could know what I was working toward, and the first item I wrote down was “successfully apply to medical school.” This section also included personal goals such as “be more outgoing” and “develop strong time management skills.” Everything I placed on the map afterward focused on completing the goals I had listed at the start.

The next section, “academics,” was also goal-oriented but specifically focused on scholastic pursuits such as “maintain a good GPA” and “take classes that are challenging” along with a statement on why I believe in the value of a difficult course. The statements providing meaning for the goals serve as a strong source of motivation. I also placed several scholarship opportunities in this category, each with its own branch and embedded link to the scholarship’s website.

My section on “volunteering” is the smallest since I have done the least amount of exploration in this field, but it is split into medical and nonmedical branches, with opportunities that I have participated in or am considering listed in each branch. The websites of each volunteer organization are linked to the map.

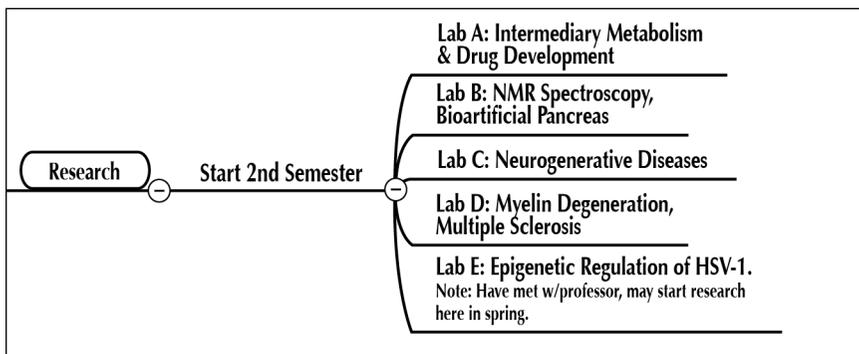
I was hesitant to include a “sports” section at first, but sports are important to me and I knew they would be an important part of my schedule. Including them in my map ensures that I always have enough time to complete all my other tasks. The more comprehensive a concept map is, the more useful it will be, and it should serve not just as a school planner but as a life planner.

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“Clubs” quickly became one of the largest sections in my concept map. For a freshman, the number of student organizations on campus can seem overwhelming, and, while many seem interesting from afar, they often require a significant amount of time and effort. As a result, many freshmen choose not to get involved at all their first year, but I chose to pick a handful of organizations that sparked my interest and placed them on my map along with descriptions of what they do, why they appeal to me, and dates of important events. As I attended events hosted by each organization, I recorded my thoughts on the map, allowing me to keep track of my views on each group and to narrow down which ones I would focus on in the future. As the semester progressed, the clubs that I was most interested in became apparent because their branches were filled with details about past events and future plans. The natural growth of the map helped highlight the best opportunities.

Like “clubs,” the “research” section quickly filled with tiers of information over the semester (Figure 2). Finding a laboratory research position is perhaps one of the most daunting tasks for a freshman, requiring extensive research into possible mentors. The numerous options make it difficult to pinpoint one laboratory that is a perfect fit, and the technical descriptions of each laboratory can make it difficult to discern what each one actually does. However, as I quickly realized, the concept map was the perfect tool for such a task. As I explored the database of researchers on campus, I added a new branch each time I discovered one whose work interested me. Each branch consisted of a summary of the professor’s topic of interest along with the laboratory’s website. After compiling my list of possible mentors, I added contact information for each professor and links to papers published through each laboratory so that I could make comparisons. After many hours of pouring through papers, I finally chose a mentor to contact. Having the concept map to aid me in this process undoubtedly made the process easier by pooling all my data into one organized, easily readable source.

Figure 2. Sean’s Research Section



PROJECT ASSESSMENT

At the conclusion of the semester, all students in the class were asked to reflect on the concept map assignment in one of their final online guides. Through the prompt, students considered the following questions:

- How did the concept map activity help you organize your plans for involvement as an undergraduate?
- How else might you have organized your plans?
- How did the process of creating the map make you think about your plans?
- Would you have thought about your plans as in-depth without this activity?
- Why or why not?
- Why do you think we had you review your peers' concept maps?
- Do you think you will revisit your map after this semester?
- Any other feedback or thoughts about the concept map activity?

The feedback was overwhelmingly positive. Students commented that the concept map activity helped them to visualize, organize, and prioritize their goals. While students had many ideas for involvement, the concept map forced them to put their ideas into one place as well as to conduct in-depth research on how to put those ideas into action. One student noted that she had never written down her goals before. Many students had felt overwhelmed with options and found the concept map valuable in organizing those options in a way that made sense to them. As one student observed, "Without this resource, I was feeling very overwhelmed by all of the things that I wanted to accomplish, and I wasn't sure that I could do it all. After organizing it in this map I definitely feel that I can accomplish at least one thing in each section, if not more."

Students generated ideas for alternatives to mapping their goals and ideas, but all of them mentioned that their ideas were not as comprehensive as the concept map. Some of those ideas included lists, calendars, planners, bulletin boards, sticky notes, and scrap paper. Students posited that in many cases they would have jotted down ideas on available paper and promptly lost them. With the concept map, all of their ideas were in one place that was easily accessible. They could add contacts, additional notes, and other pertinent information to the map as needed.

Students found several positive outcomes from the peer review component of the assignment. Most students learned about new ideas and opportunities by reviewing each other's maps. The exposure to other ideas was invaluable on such a large campus where it was difficult to know about every opportunity available. Likewise, students recognized that, as high-achieving STEM majors, many of them had similar goals. Understanding their commonalities helped build bonds among classmates. A few students used the peer review to spark competition, to see how they stood compared to their peers. Finally, many

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students commented that the peer review helped them get ideas for formatting their maps and that it was interesting to see how the other students organized their thoughts.

Out of twenty-four students, only three did not mention whether they would revisit their maps after the fall semester. None of the students said they would not revisit their maps. The rest of the class ranged from “probably will” to “definitely” and “absolutely,” and several students responded that they planned to continue updating their maps. Overall, students commented that the concept mapping assignment was “unexpectedly helpful” in helping them organize their thoughts.

As for negative comments, one student noted that it was tedious to include all of the contact information on her concept map. Another student commented that he would have liked additional style tools within Mind Meister to edit his map. Otherwise, students found no challenges in using the online software.

From my perspective, the concept map provided a way for students to curate a multitude of opportunities they were learning about from a variety of resources: prior knowledge, research through online guides for the class, opportunities discussed in class, and opportunities they heard about in other courses or on their own. Before I started incorporating the concept map assignment, students wrote a reflection paper at the end of the semester in which they addressed some of the activities they wanted to pursue. It was difficult to discern, however, if students fully understood the steps they needed to take to accomplish those goals. By integrating the concept map throughout the semester, I was able to scaffold the idea of creating purposeful action plans for involvement that felt manageable and achievable to first-year students.

IMPLICATIONS

The experiences of our incoming honors students, such as those that Stephanie and Sean have described, are not unique to our institution. Whether honors students have a variety of interests spread across many areas or very specific interests in targeted areas, the concept mapping activity can help them organize their thoughts into a well-researched document. While Mind Meister was appropriate to the STEM course, other online products might work just as well in other disciplines.

The concept mapping activity can easily be transferred to any Introduction to Honors or Honors First-Year Experience course. The assignment did not take any in-class time aside from an initial demonstration of how to access the Mind Meister site and reminders about due dates; all other work took place outside of class. The activity might also be helpful in a senior capstone or thesis course. In a capstone course, students could brainstorm their goals and activities relevant to post-graduate life while, in a thesis course, students could focus on specific tasks related to their research.

In honors colleges or programs where honors advising is mandatory, advisors could encourage their students to update a concept map and share it with

them prior to their meeting each term. The concept map could provide a variety of talking points for goal-setting, contacts, and resources that students and advisors had not previously considered. For example, in reviewing one student's concept map at the end of the semester, I discovered that the student was interested in a very specific type of graduate program, so I was able to point him in the direction of a special international program as well as connect him with an honors alumnus who had participated in the program. Without seeing that program on his map, I probably would not have known he had that interest.

Larry Clark's comments on the education of academically talented college students, which I quoted in my introduction, are worth revisiting here: "Our first effort should be directed toward helping students learn what paths will be most satisfying in their own lives in relationship to their other desires, involvements, and commitments" (84). By completing the concept mapping assignment, students have the opportunity to create specific paths that will be satisfying to them in relation to all of the other expectations, commitments, and interests in their lives. Although it is too early to tell if students will use their maps long-term, the end-of-course assessment results are promising. As Sean eloquently stated,

A properly designed map is an incredibly powerful tool, as it provides a meaningful sense of direction for navigating an open-ended world. Ultimately, this is the very purpose of using a concept map as a student, as it serves to disentangle the chaos of undergraduate life and sort it into digestible (and accomplishable) pieces.

For high-achieving students in any major, the concept map assignment is an activity worth exploring.

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