

Faculty Application for HHMI Faculty Scholar Program

Howard Hughes Medical Institute – FIU Faculty Scholar Application

Name: Charles Darwin

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Title: Assoc. Prof. Cool Science

Course you are proposing to transform (ex PHY 2049): SCI 1234 (Cool intro science lecture)

Expected Enrollment: 150

Primary student population in course

- Upper Division Majors: _____
- Lower Division Majors: X
- Non-Science Majors: _____
- Service Course: _____

How frequently have you taught this course in the last 3 years? 3x

After you participate in the Faculty Scholar program, do you anticipate continuing to teach this course?

My assignment has been to teach SCI1234 for the last four years and I am committed to continue these reforms in these courses (pending evidence that it positively impacts students). I have a letter from my department chair indicating her intention to continue assigning me to this course for the next three years.

Please describe your motivation for transforming this course:

During the last four years, I have been frustrated by the disconnect between me and my students in the classroom. I found that students are not succeeding at the rate I would hope they would, even with devoting time to the course. I have also been intrigued by the reform efforts happening at FIU in the introductory science courses, as well as by my colleague XXX at institution YYY. I have selected flipping, or inverting, my introductory biology class, as it allows me to focus my efforts on the helping student-student interactions that I have used throughout my career. This alleviates my having to train myself on any specific developed curricula.

I also view this as a classroom experiment that others at FIU can learn from, as I am willing to share my experiences and student data with others. Having seen Prof AAA and BBB (previous / current HHMI scholars) present their inverted classroom results at the DBER meetings has emboldened me to try out the flipped classroom approach and share my outcomes.

Laird Kramer 1/17/2013 6:57 PM

Comment [1]: Statements and supporting documentation like this strengthen the application because it shows that the investment by the HHMI project will continue to impact students beyond the time the Faculty Scholar is supported by HHMI.

I see this as the first phase of a longer commitment to changing my classroom. I hope to implement additional active engagement techniques after gaining flipped classroom experience.

Please describe what you anticipate the course will look like after your participation in the faculty scholar program:

Students in the course will prepare for each week with a 1-2 hour online assignment that consists of selected readings, several short mini lectures (10 minutes or less), and several conceptual homework problems. In the classroom, they will work out solutions to homework problems by working in groups. After each problem, I may elect to have one or two groups report out to the class. This will be achieved by having students email photos of their solutions to a flickr account so that their solution can be displayed to the class and discussed (I saw this demonstrated at a national science meeting). This will give students the opportunity to see how others work problems as well as replicate 'publication' in a journal or presentation. I do not plan on formal lectures (as they will be done online prior to class) and will instead summarize the critical points.

One crucial aspect of flipping the classroom is to allow a safe space for students to get stuck in doing problems and then lead them to getting unstuck. I will embrace the Learning Assistant model to allow for the LAs and myself to circulate in the classroom and provide timely feedback. The LA interactions will be Socratic to emulate the initial sequence of questions students should be asking themselves as they do homework on their own. I will meet with LAs for 1-2 hours per week to prepare them and myself for the classroom activities. I would like to request help in acquiring a room slightly larger than the class cap. This will allow several rows to be left empty so that the LAs and myself can quickly circulate among the class to facilitate group learning.

Outside of the classroom, I expect my students will be able to extend their problem solving skills, reaching further than they could in class. I will encourage them to continue working in groups outside of class. I would like to request some space for them to meet informally for 10-20 hours per week. I would like to have LAs available for some of those hours, asking each LA to spend 1-2 hours per week in the open lab.

I should add several other details. I will prepare the short mini lectures at least 2 weeks ahead of class. I may supplement those mini lectures with lectures by notable cool scientists that I find on the internet. The groups will be randomly assigned initially. As I gain experience with group work, I may customize the group selection, perhaps by matching different skill or experience levels into each group.

Have you identified any curricula for potential adoption?

Yes, I will be adopting the Flipped Classroom approach.

If so, why have you identified this curriculum?

The Flipped classroom is a content-independent curriculum that does not require significant training to implement. I would prefer to focus my attention on teaching, rather than learning a specific curriculum plus the teaching aspects. Further, I have seen Prof GGG present results from

Laird Kramer 1/17/2013 7:18 PM

Comment [2]: This response indicates that your results will influence others as well as your future teaching technique. You will both utilize your DBER experiences as well as support DBER in the future.

Laird Kramer 1/17/2013 7:59 PM

Comment [3]: How will you use LAs?

Laird Kramer 1/17/2013 7:55 PM

Comment [4]: Asking for help in resources necessary for good classroom instruction is certainly acceptable.

Laird Kramer 1/17/2013 8:00 PM

Comment [5]: Providing a thorough vision of your plan is beneficial. We don't expect all details to be provided and expect ideas to evolve as you delve into your project. Like where are the exam notions?

his flipped classroom at DBER in spring 2014. I believe that I will be able to accomplish my goals of improved conceptual understanding and passing rates with this curriculum.

Are you aware of any assessments that could be used to allow us to gauge student learning in the class you will be transforming? (This may include national normed conceptual tests, common exams from national organizations, etc)

Classroom reform has benefitted from a variety of assessments that would provide valuable feedback to me as an instructor, and to the HHMI project. These assessments include XCI for conceptual understanding of Cool Science, C-LASS-X for attitudes toward learning cool science, SALG for students' perspectives on learning gains, grade analysis for investigating increased retention in the course.

Do you anticipate using LAs in this course?

I anticipate having 4-6 Learning Assistants in each of the course's lectures as well as asking them to support 1-2 hours per week of open labs for a total of six hours/week.

If so, what will the role of the LAs be?

The Learning Assistants have been used in my cool science department already and I expect to have LAs help support me with the management of classroom engagement. These LAs will be expected to attend to a weekly planning meeting where we will discuss the curriculum plan for the week, discuss the upcoming activities and address any concerns with the class.

Do you anticipate using PLTL in this course?

If so, how will you?

Because I will be using LAs I do not anticipate using PLTL in this course.

Do you have anything further you would like us to consider in your application?

I have a letter of support for my application from Dr. BBB who has agreed to work with me as a mentor. Dr. BBB has been implementing reform instruction for X years and will be attending the weekly planning meetings and advising me on working with LAs.

I would like to request 6 LAs, anticipating that I will be able to secure funding for 2 through my department.

Laird Kramer 1/17/2013 8:03 PM

Comment [6]: This indicates what some of the features of the curriculum you will be adopting are and how they will translate to outcomes that are important/valuable to you.

Laird Kramer 1/17/2013 8:04 PM

Comment [7]: Identifying assessments is important, especially when it comes to matching them with the expected outcomes that are important to you. Having some assessments identified dramatically reduces the burden on the management team.

Laird Kramer 1/17/2013 8:06 PM

Comment [8]: Using LAs (or PLTL leaders) is a good part of any HHMI course transformation, but knowing what they will do and how they will be prepared to do what they need to do will optimize the role of the LA in the class. It is essential to meet with LAs to help them prepare to be effective.

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Comment [9]: Identifying any support that you have which can be leveraged to further ensure the success of a project is great to show. Other things that would be beneficial might include an indication of where the results might be presented (we have funds to support this type of activity) or possibly where you will go to get training on the curriculum if there is no local support available.