

Title: Adventures on a Journey in Curriculum Development: Starting with the End in Mind

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Abstract

Faculty members are the designers for curriculum and student learning experiences to meet specific goals, standards, or some other purpose (such as "catalog copy"). Typically, the focus is on topics, using specific resources, and covering the topics. The focus should be on the process of uncovering the heart of the discipline. This process to uncover understanding begins with what students must know and be able to do and proceeds to the evidence that will be acceptable to demonstrate they have learned. Only then can educators focus on developing specific learning circumstances that will best help students acquire the knowledge, skills, and understanding to successfully embrace the heart of the disciplines.

This paper discusses initial lessons learned in: 1) leading the unique component of a new preparation program for information assurance professionals and 2) using a process to design curriculum that will engage students in exploring and uncovering their understandings of key aspects of leadership. Two faculty members describe their adventures on a journey in using the framework and guidelines in *Understanding by Design* (Wiggins & McTighe, 1998) to create curriculum that will engage students in exploring and uncovering understandings of key ideas in their quest to become leaders. The lessons learned on the journey will help other educators as they begin to develop curriculum that will immerse students in doing their disciplines instead of reading or studying about them.

Introduction

Higher education faculty constantly feel the tension between "covering content" and helping their students with true learning (Licklider, et. al., in progress). They know far more than they did even five years ago about what learning is and how to cause learning to happen. Many work hard daily to actively engage their students in their classes. Many also work hard to develop new ways of assessing student achievement. These committed faculty know they are making progress if only because students are less resistant to new paradigms of learning in higher education. However, frustrations about effectiveness of their efforts often continue as faculty realize students didn't acquire what they should have in a prerequisite course or that what was taught just didn't get learned in a deep way or a way that could be transferred to new situations (National Research

Council, 2000). And, in the midst of their myriad duties and the demands made upon them, and despite their best intentions, faculty often find themselves reverting to leading learning experiences and assessing student learning "the way it has always been done" in higher education--lectures and tests.

Many are coming to realize part of the problem lies in the fact that faculty themselves don't have a solid understanding about what they are really trying to accomplish, either in specific disciplines or as a university as they work toward educating students. But seldom is there sufficient time to think about and develop the learning experiences that will help students develop habits of heart and habits of mind that will outlast the final exam. Even more seldom does it happen that faculty even take the time to thoughtfully consider what really matters for their students in their lifetimes after they leave the university. **What really does matter? What is worthy of understanding? What is the heart of the profession for which we are preparing the students with whom we work?** These are difficult questions, the best answers to which will emerge only from hard work toward developing a new kind of curriculum (Wiggins & McTighe, 1998) and after hours of reflection about the effectiveness of every part of that curriculum.

The answers to these challenging questions have become the ends for we two educators who have embarked on a journey to help students make meaning of leadership as they prepare to become information assurance professionals. We have come to learn that if we can deliberately decide what really matters about leadership, what is worthy of understanding, and what lies at the heart of leadership, we are more likely to effectively focus our efforts in helping students develop leadership skills and habits that will last

them a lifetime. Our graduates will then be much more likely to carry their understandings and their habits of heart and mind forward as they leave us to make differences in our world.

This venture into developing leaders came for us at the same time we have spent years working with faculty helping them develop into educators. We are at the point with faculty where we are working with them to develop curriculum for their own disciplines in a way far different from how they have typically worked. What we have realized in promoting a backward design process for curriculum development for other faculty is that we need to be using the process ourselves to best help our students become leaders. And, in actually involving ourselves in the process of backward design for a series of real courses in a real program, we are experiencing the challenges and roadblocks all faculty will likely encounter as they seek to develop learning experiences to promote deep understanding. As we immerse ourselves in the process we are coming to better understand both our own discipline and the backward design process. We know we have learned lessons in our endeavors that will benefit others.

This paper discusses initial lessons learned in: 1) leading the unique component of a new preparation program for information assurance professionals and 2) using a process to design curriculum that will engage students in exploring and uncovering their understandings of key aspects of leadership. After a brief background about the information assurance professional preparation program, we first list and describe the initial lessons we think we have learned about students and the faculty who work with them as they struggle to develop into leaders. Next, we describe our journey to reveal how we came to those lessons. After then discussing what we have done because of what

we have learned and outlining what we think the rest of the journey may be like, we conclude with a description of initial lessons for faculty who embark on a similar journey to design curriculum that promotes student understanding.

Background about Information Assurance Professional Preparation

There is a critical need for skilled professionals to protect information that travels through cyberspace, but few people are prepared to serve in these important roles. The need is particularly crucial for the federal government. Therefore, the National Science Foundation and National Security Agency partnered with a number of institutions of higher education to support information assurance professional development programs. Institutions selected to participate were already engaged both in research in the field and in the process of developing academic majors in the information assurance discipline. Entitled the National Science Foundation Scholarship for Service program (NSF SFS), support comes in the form of scholarships for students to complete two years of undergraduate work or to earn a master's degree. In exchange for two years of support for their educations, participating students agree to work for a federal agency for two years after graduation.

The professors who developed the proposal for Iowa State University to become a part of the NSF SFS program realized the need in the real world for professionals with not only technical expertise related to information security but also the need for those experts to be effective leaders who better understand human interactions and learning. Therefore, they included leadership development requirements for the students selected for participation. In addition to completing a core set of required discipline-specific

courses, the students are involved in a four-semester leadership development program. The intent of the program is to prepare the students to contribute to the common good as worthy team members and leaders regardless of positions and regardless of the organizations in which they are employed.

Initial Lessons Learned about Information Assurance Students and the Faculty Who Work with Them

Lesson #1: Faculty and students alike are deeply entrenched in the old paradigm of teaching and learning.

"The old paradigm of teaching is based on John Locke's assumption that the untrained student mind is like a blank sheet of paper waiting for the instructor to write on it" (Johnson, Johnson, & Smith, 1998, p 1:5). The professor, in this paradigm, is perceived as the expert whose job it is to transfer knowledge into the mind of the student. The student is expected to passively receive the knowledge and somehow magically be able to understand and use the knowledge (Huba & Freed, 2000; Mullin, 2001; Resnick, 1985). We now know learning just doesn't happen that way (Caine & Caine, 1991, 1997; Perkins, 1992, Resnick, 1985). The old paradigm is being replaced with a new paradigm that is based on theory and research (Huba & Freed, 2000; Mullin, 2001). It places the focus on learning--not teaching. The student becomes active in the learning process and takes responsibility for his/her own understanding and development. Becoming involved in actually doing the skills of the discipline, and thinking about that doing, allows the student to practice using the knowledge and making it meaningful (Leamson, 2000; Marzano, et. al., 2001; Mullin, 2001; Perkins, 1992). Once a student learns to engage in reflection and self-assessment (Brookfield, 1995; Schon, 1987), the intrinsic motivation

to learn far surpasses any extrinsic motivators, such as grades and checking off courses, under the old paradigm (Huba & Freed, 2000; Mullin, 2001).

It is incredibly difficult to move students from the old paradigm to the new one. Many of our students have been extremely successful under the old paradigm. They have learned to figure out very quickly what they need to do in order to be successful in each class-- in other words, what they need to do to get the A or B. Since the old paradigm seems to reward the grade more than it does the learning and understanding (Mullin, 2001), the student naturally focuses on the grade instead of the learning. And, with most of their professors teaching from the traditional paradigm, students are constantly reinforced in their strongly developed abilities to memorize and perform well on written tests over content. Thus, they initially resist learning experiences structured in ways that require them to do more of their own thinking (Licklider, Fulton, Wiersema, in progress). Students, especially those who have been very successful in traditional higher education, are far more comfortable being told exactly what to do, what to think and what to correct than they are with making those decisions for themselves.

Another challenge for students learning in a new paradigm of education is self-assessment. Students are used to being told how well they did (or thought) and what they need to do (or think) differently. What we, in our leadership development program, desire for our students is that they will develop a habit of mind where they are constantly involved in metacognition--thinking about their own thinking. We want them to learn to rely on their own thinking instead of depending on someone else to do it for them. In order to do this well, they must be taught how to consider their own work and thinking,

how to analyze it, and how to develop strategies to enhance their own honest self-assessment.

Lesson #2: Most students who chose to major in information assurance or related disciplines such as computer engineering, mathematics, or computer science appear to have low ambiguity tolerance.

Much of the post-secondary education study these students have done involves one "right answer" (at least that is what they tell us is tested). Students usually are given very rigid requirements for how an assignment is to be done even to the point of how many pages. Seldom have these students experienced an opportunity to design their own projects or assess and revise their own work. Having to provide evidence of their learning or reasons for their claims seems very foreign to them. Therefore, finding themselves in a course with development as the goal can be very threatening.

We are thinking about development as defined by Robertson (2001): a process of adding something, such as thoughts, feelings, or behaviors, to what was there already and, as that something is integrated, having the whole that is joining, such as a perspective or frame of reference, be transformed. Many of our students are uncomfortable, even very stressed, with open-ended assignments. For many students, even the thought of not having the "right answer" to an impromptu question asked by the professor because of something someone else said or about something in the news is threatening. Our students much prefer to know exactly what they have to do to get the grade they want (despite the fact that they will actually grade themselves and provide rationales for their evaluations). They have never had an educational experience that asks them to really attend to their own development related to the knowledge and skills of a discipline.

Lesson #3: Students need to do leadership--not just learn about leadership.

The acquisition of knowledge and skills does not automatically mean that a student really has a deep understanding for the heart of a discipline. In fact, under the old paradigm of higher education with the focus on "covering" so much content, the heart of the discipline is often covered instead of being revealed to the student. Knowledge and skills are tested, often without even being tied to authentic situations (Mullin, 2001).

Educators are frequently deceived into assuming that students understand key notions and content. Students are very good at telling professors what they want to hear. In fact, it is a well-known study strategy among students to find out from students who have previously taken a particular course to "find out what the professor wants." Thus, students who do well on traditional tests can often portray deep understanding of a subject as a result of being "book smart." It is possible for students to "know" a lot about something but understand very little. The key to assessing deep understanding is examining the performance of the understanding in an authentic, real world experience or in transfer of the understanding to a new situation. Therefore, students in our leadership development program must practice leadership, not just read and test about it, before it is possible to assess their development as leaders.

Lesson #4: Faculty must struggle with developing enduring understandings before designing the rest of the curriculum for any course or program.

So much information exists today in almost every discipline that it is nearly impossible to even expose students to all of it, much less expect them to learn, understand and be able to use it. We couldn't develop a leadership program until we wrestled with

determining what we really want to accomplish. What really do we want our students to have in their heads and their hearts to embrace and practice for the rest of their lives-- long after they have forgotten any particular part of a leadership course? We have to figure out where we are going if we are planning to go there with our students.

Lesson #5: It is necessary to reveal to students the expected behaviors that will provide evidence of mastery of the developmental levels of becoming leaders.

Knowing where we are going is not enough. Neither is just telling students where we are going enough. Remember, we know they are good at telling us what we want to hear or being "book smart." They transfer that skill well from reading a textbook to reading our list of enduring understandings and then using them in conversation. Without critically listening and assessing, we can again be deceived into believing students "understand." Students have to have examples of what the enduring understandings we want them acquire look like. They need specific criteria, that have meaning for them, with which to compare their own thoughts, words, actions and behaviors if we expect them to develop into professionals.

Rubrics are useful tools for assessing performance in specific areas. They are also critical in revealing expectations to students. Each enduring understanding can be broken down into a number of criteria that further clarify the desired level of understanding. Assigning descriptors of levels of performance with each criterion provides meaning for students. These rubrics can guide students in their own growth, development, and self-assessment as they become practicing leaders.

The description of our journey, thus far, will reveal how we came to learn our initial lessons.

Adventures in Our Journey to Create a Program to Develop Leaders

We first address the initial activities of the leadership development program prior to the beginning of the academic year and the purposes for each activity. Next, we examine what happened to all of us--students and faculty--as the culture of the academic year influenced our first attempts at helping students learn about leadership. We then acknowledge how we veered off the trail and were lost. The lessons we learned while getting back on track will help others as they begin to immerse students in doing their disciplines instead of reading and studying about them.

The two days spent with the students prior to classes in August were extremely successful. But at 8:00 a.m. on that Friday morning as ten students and four faculty members sat around a table and introduced themselves, we were all wondering about our decisions to embark on this journey for the next two years. It didn't take long for the students to realize this experience would be different from past educational experiences. They were quickly immersed in activities to break the ice, get to know one another and think more deeply about their own learning. A sense of community started developing even more quickly than we had planned. During those two days the students seemed to put heart and soul into each learning experience in which we asked them to engage. Discussion and reflection gave each student a chance to begin to confront individual beliefs about learning and leadership. Listening to others with different experiences and backgrounds gave all an opportunity to consider other points of view. We were excited about the potential of the group. With continued hard work on all the experiences we had

planned and with honest and open communication we were sure the Cybercorps students would develop into the competent leaders so needed in the quest to protect our national cyber information system. But, our first lesson was just around the next corner.

It was near the end of September (just before midterm) when the first lesson, which in hindsight we should have known, derailed us. Prior to the attack on America we had selected five well-known leaders from American history and asked each of the students to study one of them. Their task was to analyze characteristics and qualities contributing to success as leaders. During small group discussion, each student was asked to summarize the contributions of the person he/she had studied and to identify the reasons for that leader's success. The final task was to have the small group develop a list of qualities and characteristics needed by successful leaders. The list would be shared and discussed during the next three-hour evening session of the group. We decided to use a different approach to encourage discussion about the lists after the 9/11 attack on America. Instead of just sharing the lists, we planned to have the students work in the small group and use a comparison matrix to compare and contrast the five leaders the group had investigated. The next step was to have the group select three individuals from recent news stories of the attack on America they perceived as leaders--one from the political world, one from the media and one from everyday life. Together they were to complete another matrix to understand more deeply the complexity of being an effective leader, especially in the immediately post 9/11 world.

It seemed like a good plan, but it didn't take long for it to explode into a near disaster to our developing sense of community. Listening to the small groups complete the comparison matrix was a great disappointment. Gone were the reflection and deep

thinking we thought we saw emerging in August. Individuals were talking, but very little listening and even less thinking was apparent. What was evident was that students were just going through the motions of completing the task we had designed. Instead of sticking to the plan for the evening, we brought the groups back together for some much-needed examination of what we saw happening.

Fortunately, the sense of community and trust we had been developing since August did allow for open and honest discussion of the activity. After getting frustrations out in the open, the students realized they had reacted to the stress of mid-term time by reverting to old habits that had provided them with success thus far in their educational careers. Instead of engaging in an activity for the sake of deeper understanding, they were simply filling in the blanks so they could check one more thing off their long lists. None of us realized how easy it would be to slip back into the old paradigm of teaching, memorizing, filling in the blanks, and checking things off the list. We thought we had discovered our first lesson—students are deeply entrenched in the old paradigm of teaching and learning.

With more discussion, however, we realized there was more to the first lesson. The leadership development program we were developing was not a “course” as the students were used to higher education courses. It was a required experience for the students but did not carry credit or a final grade. With more discussion of the influences of the traditional academic culture, it was soon revealed that, to a student, all of their other courses were very traditional. There were lectures accompanied by rigid assignments with hard and fast due dates along with exams coming at the students very quickly. As we should have known, meeting challenging timelines in other courses was

much higher on every student's list of priorities than a class that carried no credit or grade. In addition, we began to realize that although we intended for the students' experiences to be different in our "class," we were also reverting to more traditional ways of studying leadership. We revised our thinking about our first lesson: *faculty and students alike are deeply entrenched in the old paradigm of teaching and learning.*

From this experience the lessons emerged quickly. Further discussion with the students revealed their increasing frustration with not knowing "what we wanted." It was very difficult for them to internalize that our desire for them was to engage in deep thinking about concepts and that to do so meant that they would put their individual perspectives on assignments and activities. The ambiguity associated with being in charge of their own learning was foreign to them. Their educational world to date was one of concrete "right" answers. The students agreed with us about the next lesson that emerged: *most students who chose to major in information assurance or related disciplines such as computer engineering, mathematics, or computer science appear to have low ambiguity tolerance.*

As the facilitators of this leadership development experience for students, we engaged in much more discussion about what we saw happening with us and with our students. We were frustrated because we thought our students were regressing. Prior to being overtaken by the challenges of the traditional academic culture, we thought our students "knew" so much about leadership. Indeed, in our first experiences together, we were impressed with the language about leadership our students used, how well they seemed to be able to talk about what good leaders do, what effective group members do, and what is required to accomplish a common goal. And then, we realized the obvious—

our students were good students! They were what we called “book smart” about leadership. They really understood very little about leadership, the qualities, tasks, and traditional roles of leaders. They conveyed to us that their common understanding about leadership was that a leader is someone in an authority position. We wanted so much more; we wanted our students to be leaders, regardless of their formal positions. Then emerged our third lesson: *to develop as leaders, students need to do leadership—not just learn about leadership.*

It was time for us to revisit one of our own beliefs about how learning happens—by doing and then thinking about the doing. Books about leadership were not the answer to our roadblocks. The right books would be good resources, but couldn’t be the only focus for our students. But, how could we get students to do leadership, and what exactly does that mean? With continued reflection and discussion together about our mid-semester experiences, we realized that we didn’t really know where we were going. After all, this was a program like so many developed in higher education where we had to deliver it before it was fully developed. We knew that we wanted our students to understand deeply about human learning and to be effective leaders. We knew they were becoming book smart about both. They knew the right things to say and could talk on a surface level about many aspects of leaders and leadership. Their actions and behaviors outside the structured classroom, however, indicated their understandings and their abilities to transfer their understandings to everyday situations were very limited.

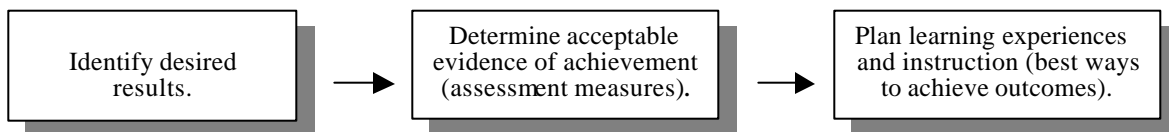
Our next lesson was right around the corner. Since this was a new program with no required curriculum, we had an opportunity to develop our own curriculum. That exciting realization was just what we needed to deliberately immerse ourselves in

exploring and practicing backward curriculum design (Wiggins & McTighe, 1998). How easy it appeared, but appearances are deceptive. Lesson number four emerged: *faculty must struggle with developing enduring understandings before designing the rest of the curriculum for any course or program*. For understanding about this adventure on our journey, we must first take a side trip to discuss the curriculum design process promoted by Wiggins and McTighe.

Designing Educational Experiences to Promote Student Understanding

The Backward Design Process

Wiggins and McTighe's (1998) curriculum design process lies at the heart of our work:



The three steps seemed simple. We would just start with identifying desired results. What should leaders know, understand and be able to do? What enduring understandings are desired? Answers to these critical questions would reveal where we wanted to end with our journey.

We are using Wiggins and McTighe's (1998) framework (Figure 1.) to help us establish curricular priorities as we think about developing leaders. The enduring understandings are those big ideas or notions that we want our students to put into their hearts and minds to guide their lives long after they leave us. As we define the enduring understandings desired for leaders, we are using these filters as outlined by Wiggins and McTighe:

- To what extent does the idea, topic, or process represent a "big idea" having enduring value beyond the classroom?
- To what extent does the idea, topic, or process reside at the heart of leadership?
- To what extent does the idea, topic, or process require uncoverage (are not obvious and may be counterintuitive)?
- To what extent does the idea, topic, or process offer potential for engaging students?

The enduring understandings will guide the next step of our work. We will decide what is important to know and do in order to reach the deep understanding indicated by our enduring understandings. Unfortunately, this was not immediately clear to us as we thought about the three-step design process.

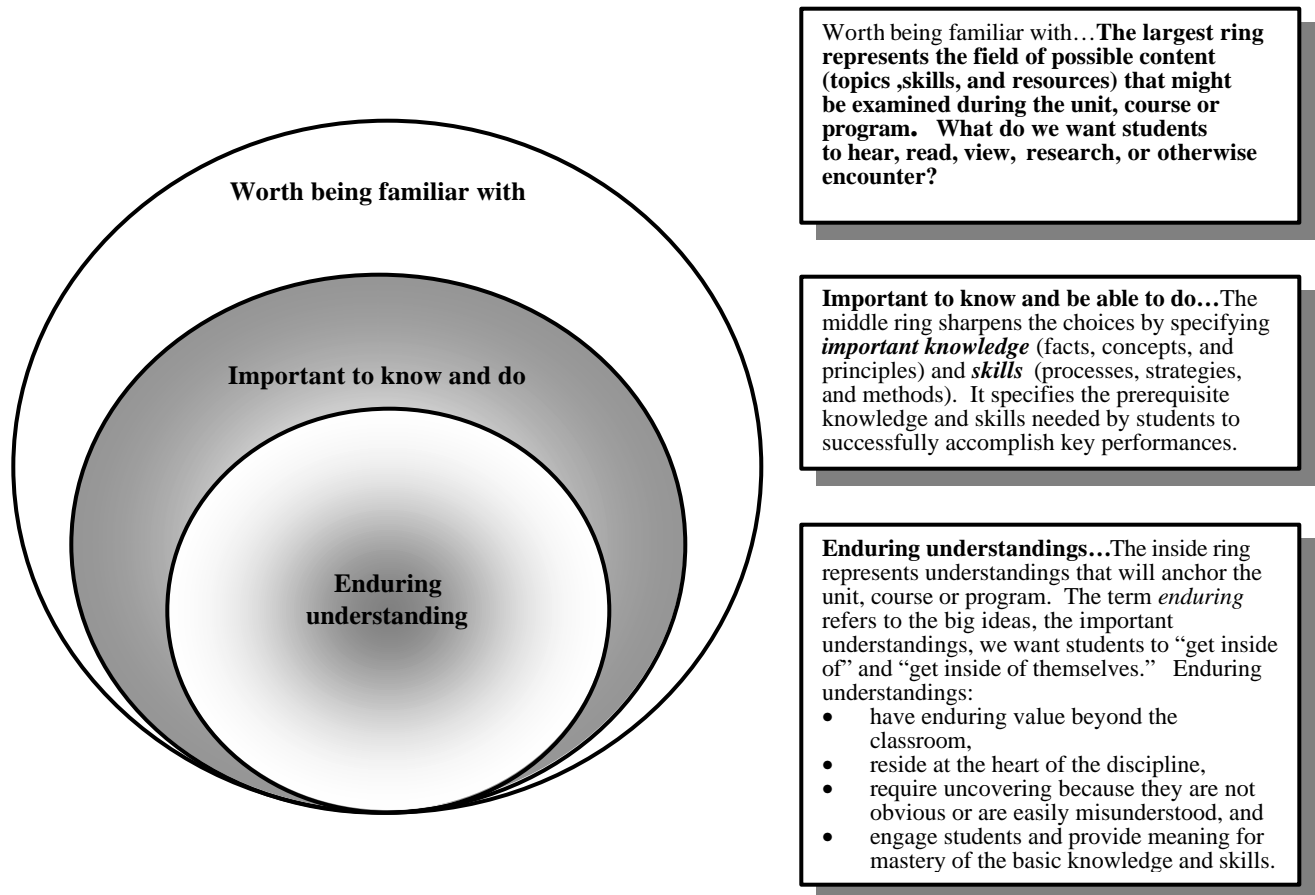


Figure 1. Framework for establishing curricular priorities(Wiggins & McTighe, 1998).

Back on the Journey

For our first attempt at determining the enduring understandings we wanted our students to embrace we drew on our study of leadership, our previous experiences in working to develop our own leadership skills and to help others develop those skills, examples of leadership in both public and private life, and our own perceptions of requirements for leaders of the future. We first had to confront our own beliefs about leadership. What does it mean to be a leader? What do we expect of leaders? Is it possible for anyone/everyone to lead? Is it possible to help others learn to do leadership? We invested many hours in reflection and discussion about those questions. We then shared thoughts and observations of first semester experiences with our students, trying to understand their attitudes and beliefs about leadership.

It was apparent that most of the students continued to view leadership as positions of authority. The experiences they shared seemed to revolve around people in authority positions who had influenced their lives, around their own experiences when they held positions of leadership or around examples of leadership in world history. We wanted them to consider other perspectives, especially to consider that everyone can, even must, do leadership. After many hours of discussion and analysis, we agreed on five enduring understandings that we wanted our students to embrace: 1) leadership serves others; 2) leadership uncovers complexity, ambiguity, and change; 3) leadership embraces multiple perspectives; 4) leadership empowers others and fosters interdependence; and 5) leadership depends upon understanding self.

After in-depth discussions with our students about the five enduring understandings, we knew we were missing something. They were able to discuss the

enduring understandings—even able to give examples, but they were not embracing them. They seemed too deeply entrenched in the paradigm of leadership as authority positions. Few saw opportunities to lead every day. During our meetings they were able to suggest ways that it was possible to lead from within. They even set goals to do that, but observation in the leadership class provided evidence they were not living and doing the many notions we heard them talk about day after day. There had to be more we needed to consider.

We did a lot more reading, and found an exciting resource for our students, *Leadership without Easy Answers* (Heifetz, 2001). Some of our students became more excited about different ways of thinking about leadership posed by the authors because the underlying notions seemed to fit with their emerging beliefs. For most, however, this was too much of a leap from where they were in their own belief systems. It was soon obvious this one book was not going to pave our way. We continued our own learning by reading and consulting with other faculty from many institutions who were helping students develop into leaders. As we learned, we revised the enduring understandings we wanted our student to have in their heads, their hearts, and their practice when they leave us.

We think we managed to not only learn our fourth lesson—*faculty must struggle with developing enduring understandings*—but we also survived the struggle. We finally have the end in mind. The enduring understandings about leadership around which we are building our program include:

- Leadership is fundamentally about learning.
- Everyone has the responsibility to do leadership.

- Leadership serves a common good.
- Leadership depends upon understanding self.
- Leadership empowers others and fosters interdependence.
- Leadership embraces multiple perspectives.
- Leadership uncovers complexity, ambiguity, and change.
- Leaders commit to and practice ethical behavior.
- Leaders accept responsibility for continuous self-reflection and individual intellectual, technical, social, and emotional development.

At the end of that first year, we were certain that a great amount of learning had happened, but we weren't sure who had learned more--we or our students. The opportunity to apply our new knowledge as we tested our understanding of the backward design process gave us the incentive to tackle designing four semester courses in leadership development. We felt we had learned an early lesson well about the entrenchment of students in the traditional education paradigm. Surely graded, for-credit courses would better help our students understand that the level of commitment and effort needed for this experience was equivalent to their other courses. The nine enduring understandings remained the overarching goal as we developed more specific enduring understandings for each semester.

As typically happens with curriculum development, however, we ran out of time. During early August we slipped back into more familiar territory as we realized the students would expect a course syllabus for this new course. Fortunately, the newly developed enduring understandings made the development of student learning outcomes for the course relatively easy. From those we were also able to list expected assignments and assessments that would be required. Now that the course syllabus was finished, we were ready for the

year! Little did we know there was another lesson ahead, and we had to follow another detour.

We were excited about the prospect of starting a new year. More students were added to the program. With the changes we had planned we anticipated benefits in mixing the first-year students with the second-year students. Since the focus was more clearly on the enduring understandings, we believed the second-year students would be able to both enhance their own understandings and have the opportunity to develop more leadership skills as they helped facilitate the learning of the first-year students. It was especially encouraging for us when the second-year students caught themselves talking with more appreciation and apparent understanding of the enduring understandings. They even admitted that they were starting to identify with them. Soon, however, we realized that their knowledge was limited to just that—knowledge with little or no practical understanding. Our relentless pursuit of bombarding them with the enduring understandings had resulted in enough repetitions for them to memorize the words, even suggest what they might mean in the real world, but their behaviors revealed immature understanding at best.

It was time to go back to the model. It had all seemed so simple: identify desired results ® determine acceptable evidence of achievement → plan learning experiences and instruction. We really nailed the first step. We revealed the enduring understandings for both the course and the program. We thought our expected student learning outcomes were clear. It was then that our most recent lesson loomed in front of us; we couldn't proceed on this journey because of a bridge out. We had skipped the second step! How could our students possibly behave in a way that would provide evidence for us of their understanding when we hadn't taken the time to "determine acceptable evidence of achievement?" We

didn't know what we expected them to think, say and do in order to demonstrate mastery of the knowledge, skills and abilities necessary for leaders. Currently, we are immersed in our response to lesson #5: *it is necessary to reveal to students the expected behaviors that will provide evidence of mastery of the developmental levels of becoming leaders*. Revealing expected performance to students is the bridge between knowledge and understanding. We are now in the process of developing rubrics for each of the enduring understandings. We are confident this will allow us to refine the learning experiences and guide the students in their own assessment and continued development.

An example of our work, so far, is presented in Figure 2. One of the enduring understandings for the program is "Leadership uncovers complexity, ambiguity, and change." The corresponding developmental enduring understanding for the first course is "A questioning attitude is essential." The rubric helps students begin to make meaning of that enduring understanding by describing concrete ways to provide evidence of achieving it.

Our plan is to develop a similar rubric for each enduring understanding. We plan to ask our students to assist us, both in developing criteria and levels of performance and in testing the practical use of the rubrics. No doubt this experience itself will present even more lessons.

Next Miles of the Journey

As we continue this journey, we think we know the next steps. But, as we travel, we plan to more faithfully consult our roadmap for developing students' understanding by design provided to us by Wiggins and McTighe. What we have determined to be acceptable

evidence of achievement, in the form of rubrics, will inform our decisions about the critical knowledge and skills that will be necessary for our students to develop each enduring understanding. That set of information will guide the further development of the learning experiences we provide for the students and the assignments we ask them to complete. As we implement what we plan with our students, we anticipate many trials and errors (based on our experiences, so far!). Along with designing the experiences, we will progress with developing the essential questions that will guide our thinking and the thinking for our students. No doubt this leg of the journey will be filled with as many road blocks and side trips as we have already encountered, but we eagerly look forward to the additional lessons we will learn. Considering these next steps in our journey has helped us to clarify what we think we have learned in our experience in this process and to frame those lessons in the form of advice for those who would travel this path.

Lessons for Other Travelers to Consider

The adventures we have encountered so far in our journey are informing our work with two faculty groups embarking on similar journeys to develop curriculum to promote student understanding in their own disciplines. We think the lessons we have learned about the process will help them either avoid roadblocks or more quickly find the detours.

The first lesson is to *trust the process*. Hopefully, we have learned this most recent lesson well – hold true to the model of backward design, and it will work. In an ideal world, we would advise faculty to follow the process step by step – skipping nothing, but we know the time constraints of faculty can prevent that kind of intense curriculum development. We suggest doing exactly what we have done so far: identify the end and try to decide what

achievement of that end looks like and continue the process through the backward design steps. But since all the development work will likely not be done prior to having to lead courses, survival will demand short cuts. The short cuts may work temporarily, but when frustration sets in, faculty should return to the model as they continue to use their work with their own students. In proceeding this way, students will help faculty internalize the next lesson.

The next important lesson is to *trust the students*. We have come to realize that our frustrations are often first aimed at students. However, when we work with them, we realize they really want to learn, and we can learn with them. Faculty must really observe their students, listen to them, ask them questions, and design opportunities for students to reveal the depth of their understandings. Only then will faculty best know the next steps in guiding students to deeper understanding. However, a very important lesson for us was that deciphering what students are helping us learn is not easy.

The next lesson we share with others is that, to do the very best curriculum work, *faculty must engage in serious dialogue with colleagues*. As we examined what we thought our students were telling us, we found our initial analysis was not always right or complete. Our work is getting better because we engage in serious dialogue--about the enduring understandings, about what students say, about what students do, about what we are reading and, most critically, about our thinking. Only then can we really refine our work and focus our efforts on student development. Brainstorming possibilities is critical. So, too, is questioning--ourselves, each other, and what we are reading and studying about our own discipline. This must all be done out loud. It is challenging enough to get our ideas on paper, but they often sound so much different when we explain them to each other. As we

talk through ideas they become more clear to us. When we better understand, there is no question we will be better able to help our students. However, this takes tremendous blocks of time, which leads to our last lesson.

We must last let others know we have learned that *developing curriculum to promote student understanding is time- and labor-intensive*. We are more comfortable now with the time and labor intensity of this work, but it was a major frustration for us at first. We are like most faculty who like to prepare a course and call the development done. However, and again like most faculty, we want our students' experiences to be the best we can provide. We are constantly amazed at the amount of time we invest in thinking and talking about the development of our program, and we feel we are still in just the early part of our journey. We have now come to accept that we don't have to have it all done today, or even tomorrow. The most important thing we can do in our responsibilities to educate is to keep progressing as we grow and learn with our students.

Mid-journey Summary Thoughts

This is one of the most exciting journeys we have ever taken as educators, and we would urge anyone committed to promoting student understanding to take a similar journey. We know we have the luxury of developing a new curriculum with no hard and fast expectations. Most faculty don't have this luxury as they are immersed in teaching required courses for which someone else set some expectations, however poorly revealed those expectations may be. Neither do most faculty have the luxury of revising mid-course as we do, again because there is some expectation from others about what has to be done in most courses. But still, we urge educators to engage in this difficult but satisfying and rewarding

work, if for no other reason than it will help them to understand their own disciplines even more deeply.

No doubt we will learn additional lessons on our journey. We will continue to share our lessons to make the path more clear for faculty who are trying to do similar work with their own disciplines. This is not an easy journey the first time, and we suspect it will be difficult every time we travel this road, so we do offer one final caution for those contemplating the trip: this experience will likely change your academic life. We know we can never go back to developing curriculum the way it has most frequently been done in higher education. We are coming to know a better way that will be better for students. All of us in higher education want the best for our students. Not only do students deserve the best, the rest of their lives and the rest of our lives depend on helping them learn to use their minds well, regardless of the life paths they choose.

Authors' note: We want to extend a special thank you to Dr. Jim Davis and Dr. Doug Jacobson, associate professors of computer engineering and our long-time companions on the road to becoming educators. They, along with a cross-disciplinary team, lead the Iowa State University National Science Foundation Scholarship for Service program. Because of their special insights, we were given this opportunity to engage in the rewarding work to develop leaders.

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Enduring understanding for program: Leadership uncovers complexity, ambiguity, and change.

Enduring understanding for course: A questioning attitude is essential.

Rubric to assess development of a questioning attitude:

	Undeveloped	Emerging	Competent	Professional
Analysis of Information	Rarely shows consideration of information encountered	Sometimes accurately reflects the meaning of information encountered; sometimes identifies the source of information encountered; infrequently reflects about own prior knowledge; rarely thinks about perspective, bias/gain; sometimes considers what additional information might be necessary	Usually accurately reflects the meaning of information encountered including the identification of omissions; usually identifies the source of information encountered; often reflects about own prior knowledge; usually suggests perspective, bias/gain; frequently identifies and sometimes plans to seek additional information	Consistently accurately reflects the meaning of information encountered including the identification of omissions; always identifies the source of information encountered; always reflects about own prior knowledge; accurately identifies perspective, bias/gain; identifies the need for and plans to seek additional information
Intellectual curiosity	Little or no evidence that information presented prompted thinking	Often asks questions and seeks answers to: What does this mean? How can this be used?	Always asks questions and seeks answers to: What does this mean? How can this be used? Sometimes asks questions and seeks answers to: How might others interpret this? What are the implications beyond the present?	Always asks questions and seeks answers to: What does this mean? How can this be used? How might others interpret this? What are the implications beyond the present? Usually asks questions and seeks answers to: What limitation does my own understanding place on the decision? What do I need to learn to arrive at a better plan?
Action and influence	Frequently asks irrelevant questions that take others off task	Rarely asks irrelevant questions that take others off task; sometimes asks questions that support others	Usually asks questions that support others; sometimes asks questions that cause others to think more deeply	Consistently asks questions that both support others and cause them to think more deeply
Self-knowledge	Apparently unaware of the bounds of own understanding and prejudice in opinions and attempts to understand	Sometimes asks questions of self that indicate awareness of what is and what is not understood; rarely asks questions of self that reflect how own prejudice shapes opinions	Usually asks questions of self to reveal own ignorance; often asks questions of self to reveal own prejudice and affect it has on opinions; sometimes asks questions of self that reflect awareness of strengths and limits of own understanding	Consistently asks questions of self to reveal own ignorance; always asks questions of self to reveal own prejudice and affect it has on opinions; consistently asks questions that reflect awareness of strengths and limits of own understanding; if asked, would be able to list questions asked of self

Figure 2: Example of acceptable evidence of the achievement of a desired enduring understanding.

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