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A Systematic Approach to Transforming the Art of Teaching Into the Science of Teaching: Developing a D-DIDM Mindset

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Abstract

Data-driven instructional decision making *(or D-DIDM) is a "process by which educators examine [data] in order to identify student strengths and deficiencies" (Mertler, 2007). My view of the process of D-DIDM merges three critical educational practices: classroom-based (or site-based) action research, assessment of student learning, and reflective practice. Each of these practices are discussed individually, followed by an examination of the union of the three into a comprehensive approach to D-DIDM. The roles and responsibilities of researchers and practitioners in this process is also integrated throughout the discussion. My address is intended to motivate educators at all levels to seriously and conscientiously consider integrating D-DIDM into their classroom practice.*

mind·set or **mind-set** (mndst) *n*

- A fixed mental attitude or disposition that predetermines a person's responses to and interpretations of situations.
- An inclination or a habit.

Introduction

In this address, I plan to discuss some things that I am very passionate about; some things I think are very important for professional educators—and education, in general—and hopefully give you some food for thought as you go forward in practicing in your specific chosen field. Specifically what I want to do initially is to "dissect" the notion of data-driven instructional decision making by first discussing "instructional decision making," then talking about the data-driven aspect. I'm also going to incorporate a discussion of merging these concepts as a single broad educational process and argue for the inclusion of three critical components in that process. I think I'm correct in assuming that we are all familiar with these critical components, but that we've not really looked at these concepts as integral parts of a single process. This is one of the key aspects that I hope you take away from my talk this morning. Finally, I am going to try to integrate discussions of the roles and responsibilities of both researchers and practitioners in these educational processes.

Instructional Decision Making: The *Art* of Teaching

Let's begin by taking a look at ***instructional decision making***. My working definition for this term is the notion that all educators are constantly making decisions about educational programs, curriculum, instructional styles, and instructional materials. You name it…we make decisions about it. Hopefully, the reason that we are making those decisions has its basis in our continuing effort to maximize student learning. Let's face it…that's why we're in this business. In the past—and, probably, the not so distant past—a lot of instructional decision making was based on "gut instinct." It was based on that feeling or that sense that, as educators, we know what works with students; we know what doesn't work with students. Let me put that in a more specific context. We know what works with *our* students and we know what doesn't work with *our* students. The fact that we are talking about the students that we teach or of whom we are in charge is really a key feature of what I want to focus on. The problem with relying on gut instinct as the basis for instructional decisions is that it is not a very systematic process. Teachers, or educators in general, often try different instructional approaches. Sometimes they work, but most of the time they do not. Therefore, what we end up with is a sort of "trial-and-error" process that often results in a good deal of frustration. I am sure that you can recall examples from your own teaching. We have sketched ideas out on paper and they looked great. However, when we ultimately try them with our students, our ideas have failed miserably. Please note that I said that our "ideas failed," not that we failed. The reason that I say that is because we have to remember that we still learned something through our trial-and-error process. We have learned what *not* to do, what did *not* work. It is crucial to remember that this is still beneficial to the teaching and learning process.

Simply put, what I am referring to with this practice of "gut instinct decision making" is the *art* of teaching. Now,

I firmly believe that teaching, at any and all levels, is an art form. There are some skills that just cannot be taught; there are some skills that cannot be learned. I am sure that if you think back, you can recall a teacher that you have had so much respect for because that teacher just "got" you, helped you, reached you. When you walked into that teachers' classroom or out of that classroom on a given day, you were inspired. You were taught something that you did not know before and that was a great feeling, wasn't it? Now, try to recall a teacher who might be located at the opposite end of that spectrum. All of us have had teachers who we knew just did not get it. They were not that "artist" in their respective classrooms. As students, we could sense that. But remember *how* we are sensing that. It is sort of that gut feeling; we just know it when we see it.

Now, rest assured, I do not ever mean to take anything away from teachers who possess that art of teaching because it is a very important and integral part of the educational process. In contrast, what I want to do is to take "teaching as an art form" a little bit further than that and suggest some things that hopefully build and extend this notion of good classroom teaching. When it comes to the art of teaching, I believe that both researchers and practitioners have responsibilities. I believe that researchers have responsibilities for suggesting alternatives for educators to examine and consider trying as part of their trial-and-error process. The reason that I think that this is an important responsibility for researchers is because oftentimes, as researchers, we know were to find these resources; sometimes practicing educators may not know all of the resource capability and availability that we might. I think as researchers, we have a responsibility to work with educators and to suggest various ideas and alternatives, hopefully based on existing research. Of course, whenever we do this and suggest that educators use these alternatives in their particular settings, we immediately have issues of generalizability, along with a host of other potential implementation problems. Simply because an idea worked in the setting in which we read about it obviously does not mean that it is going to work in our setting. Unfortunately, this is not a perfect blending of the responsibilities of researchers and the task at hand (i.e., helping educators to be more effective).

I think that practitioners also have similar responsibilities, in that they need to consider research-based alternatives, and to be willing to try them in their settings. Eventually, educators still must engage in the trial-and-error process, and this continues to be a frustrating part of the process. However, I think that both researchers and practitioners have to be willing to examine resources that they may not have examined in the past. For example, if there is a great Web site that you go to for ideas, that is great, but you do not want to limit yourself to just that one Web site. You want to expand your options and look at other resources. I think that both researchers and practitioners have a responsibility to do these things and to do them *collaboratively* (I will revisit this notion of collaboration later…).

Data-Driven: The *Science* of Teaching

Let's shift to the other component of "data-driven instructional decision making" (i.e., the data driven part). As I define it, **data-driven** is the notion that questions or problems require information in order to be answered appropriately and to the best of our abilities, and that the decisions that result from those questions and actions are based on evidence. In other words, they are based on information that we gather so that they are not just our gut instincts or reactions. There is more to it than just gut instinct. Historically, when you see the term "data-driven" in most of its contexts, it has a very, very narrow definition. That definition is limited to data in the form of standardized testing results. Why has there been such a narrow view? I believe that is because we tend to equate "data" with numbers, and test scores are numbers and therefore that's data-driven. I believe that this is a very, very limited perspective. Part of the reason that I view this as a very limited perspective has a lot to do with the types of things that all of us have likely experienced when it comes to standardized testing, as a student taking a test, a teacher trying to prepare students to take a test, an administrator trying to motivate our teachers to prepare students to take tests, parents who have to deal with the results of the tests, etc. It just sort of makes you want to pull your hair out on a regular basis!

I personally do not hold this narrow view of data-driven evidence. My approach to the notion of data-driven can be summarized in the following quote:

> *I honestly don't know anyone who loves standardized testing! But the standardized testing movement is not going away anytime soon. An examination of its impact on this country's educational system over the past 40 years will confirm that. Therefore I approach it from this perspective…and I strongly suggest that all professional educators adopt a similar attitude. Anytime we are given the responsibility of making decisions about children, we need as much information as possible in order for those decisions to be as accurate as possible. We ask students questions; we ask them to read to us; we require them to write for us; we test them over units of instruction; we observe them; we encourage them to be creative; we engage them in performance based tasks; etc. The results from standardized tests are just another source of information—about student learning, about our teaching, and about our curriculum. Please use them as such—add them to your long list of various sorts of information about student learning. They can only help improve the accuracy of the decisions that we make about our students, as well as our own instruction.* (Mertler, 2007)

Therefore, I do not have the limited view that the only things that can guide data-driven decisions are test scores. In fact, the way that I view all of this is that nothing should limit you in terms of the kinds of data that you collect in order to guide data-driven decisions, provided they are sound data. They can be based on a wide variety of sources of information about students. They can certainly be based on teacher-developed classroom tests, performance-based assessments, and informal classroom assessments techniques or tasks. Consider one of several informal classroom assessment techniques, called a "one-minute paper." A minute or two before students leave the classroom, the teacher says "Take out a note card and complete this sentence: One thing I learned today that I didn't know coming in is _____," or "The one thing that I'm still confused about is _____." If you think about it for a moment, a technique such as this provides a very efficient means of collecting some highly valuable information. If a teacher did not take that little bit of effort to collect this information at the end of a class period, there are potentially lots of things that he or she walked out of class *not* knowing about the students and vice versa. Other sources of meaningful student information include student journals, student reflections, interviews with students, and surveys of students (whether they be content-based surveys, attitudinal surveys, or affective surveys). All of these sources provide potential information about students and their learning that can be very beneficial. What I am really encouraging you to do is to develop an assessment system that includes *both* formative and summative assessments. You should not limit yourself in terms of the kinds of things that you can incorporate in this overall broad system of data-driven evidence.

Earlier, I talked about "instructional decision making" comprising the gut reaction aspect in the art of teaching. To me, the "data-driven" component is the *science* of teaching. It provides a more scientific and systematic approach to this decision making process. I do not think that those two things—the *art* of teaching and the *science* of teaching—are mutually exclusive. I hope that, as educators, we would do both of these. First, I would never want to take anything away from the teacher who is a true artist in his or her classroom, because that is a rare entity. I would never encourage somebody *not* to do those things. However, there are a lot of other things that we can also incorporate into that process, in order to improve that process. I believe that both researchers and practitioners have a great deal of responsibility here as well.

We need to promote the notion of the data-driven science of teaching from the researcher perspective.

If we extend the idea of considering classroom alternatives and options and do so from a data-driven (i.e., the science of teaching) perspective, what I am really referring to is focusing on a more systematic approach to weighing alternatives and options. Employing a systematic approach implies that we utilize the scientific method. This means that we're going to generate ideas, develop hypotheses, design a scientific investigation, collect data, analyze those data, draw conclusions, and then start that cycle all over again by developing new hypotheses. (One of the other things that I will revisit later is the whole notion of all of these things being cyclical—this is not a "one time thing and then we stop" type of approach.) If we examine this from the practitioner perspective again, we will consider alternatives and options, but will do so in a more systematic fashion. This improved trial-and-error process is shown in Figure 1. It is still a "trial-and-error" process, but the "trial" piece becomes a lot more systematic and incorporates a good deal of professional reflection.

During the process of reflection, several questions should be addressed:

- How well did the idea work?
- Next time I do this, how am I going to do it differently?
- What do I need to do to extend what I have already tried?
- If my idea did not work, what am I going to do differently?

Contrary to the figure, this is not an "end-of-the-road" kind of process (note the arrow at the bottom). Based on their relative effectiveness, ideas should be revised and the revisions implemented again. It is important to recognize that sometimes the time frame from the first cycle to the next cycle maybe a year apart, especially if you are teaching in a K-12 setting. A benefit of finding yourself in this situation is that you have a year to reflect and generate ideas for the revised implementation during the subsequent cycle. It should be fairly obvious that this is a much more systematic process than just finding ideas on the Internet, throwing them together, and seeing how they fly. Therefore, the proverbial bottom line for me is that teaching, and education in general,
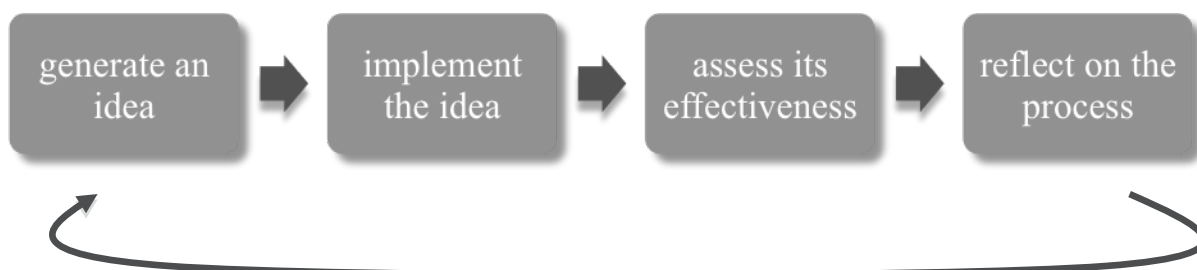

Figure 1. A more "systematic" process of trial-and-error.

is beginning to move away from *just* being an art form to being something that is much more scientific. The art of teaching has become the science of teaching (again, not at the exclusion of the art of teaching). I think that this requires a shift in mindset and I would really encourage all of us to consider maintaining the art of teaching while adding to it the science of teaching.

Data-Driven Instructional Decision Making: D-DIDM

So, let us now put these first two ideas together to form *data-driven instructional decision making*, or *D-DIDM*. I define D-DIDM as a process by which educators examine student data of any type in order to identify students' strengths and deficiencies. This should be done within the cyclical processes that we just talked about. The ultimate goal of D-DIDM as a process is to reflect on and critically—and by that, I mean scientifically and systematically— examine curriculum, instructional practices, or virtually anything relative to and that might impact student learning. Now,

I recognize the fact that, on the surface, this does not appear to be anything new. Teachers have been engaging in these kinds of professional activities since the beginning of formalized education in this country. However, I will argue that it has not been a *systematic* and *scientific* kind of professional undertaking. I think it has been much more of a trial-and-error process, as we have discussed earlier. I realize that sometimes trial-and-error can be very effective. But, I am inclined to believe that, for most of us who have ever engaged in trial-and-error as a process, this proves more frustrating than rewarding. Presented in Figure 2 is a visual representation of the process that I developed as a means of engaging in this process of data-driven instructional decision making (Mertler, 2007).

This process begins with the identification of a content area, concepts, skills, or behaviors where a majority of students do not seem to perform well, based on test data, classroom assessment scores, or perhaps informal assessments. Once identified, these concepts, skills, or behaviors should be rank ordered with respect to the most critical or important ones; number one on the list should be the one that needs
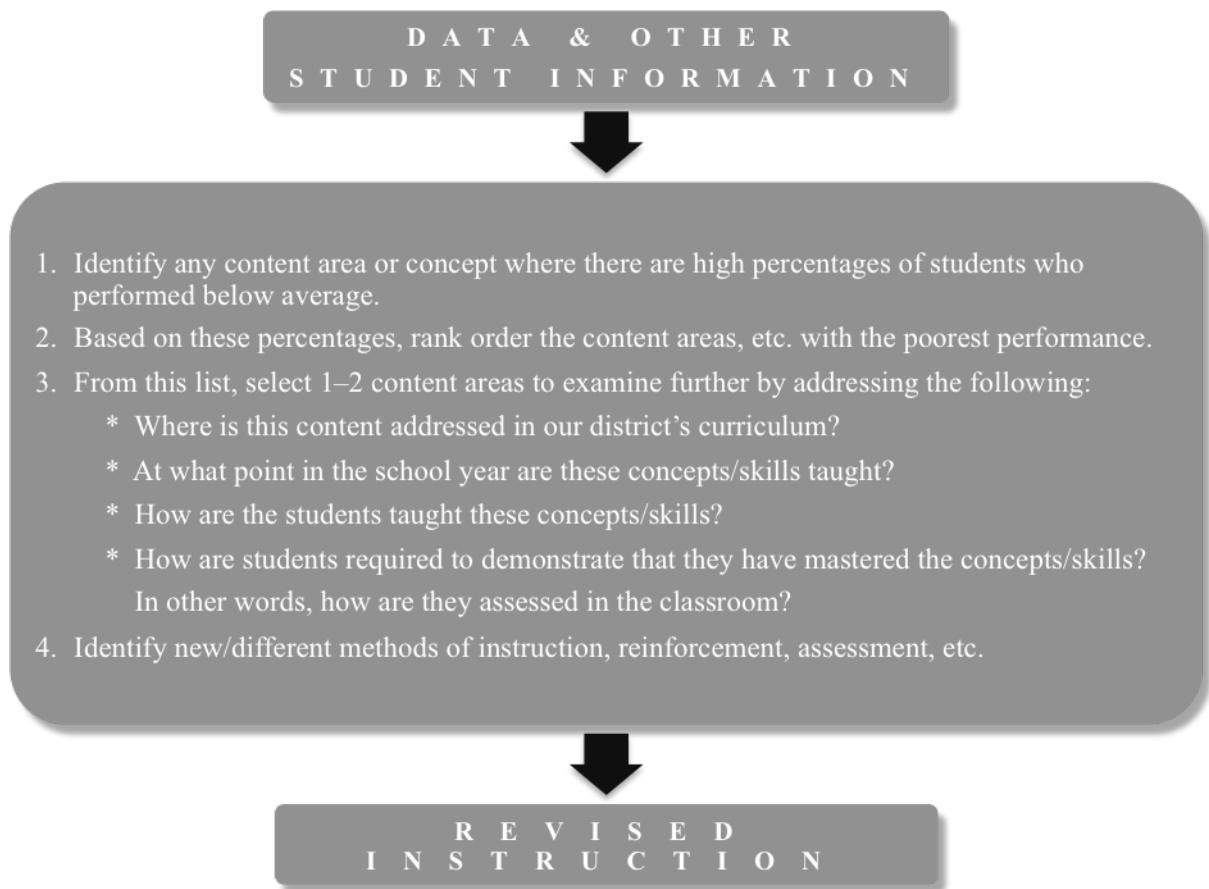
DATA & OTHER STUDENT INFORMATION

1. Identify any content area or concept where there are high percentages of students who performed below average.
2. Based on these percentages, rank order the content areas, etc. with the poorest performance.
3. From this list, select 1–2 content areas to examine further by addressing the following:
   * Where is this content addressed in our district's curriculum?
   * At what point in the school year are these concepts/skills taught?
   * How are the students taught these concepts/skills?
   * How are students required to demonstrate that they have mastered the concepts/skills? In other words, how are they assessed in the classroom?
4. Identify new/different methods of instruction, reinforcement, assessment, etc.

REVISED INSTRUCTION

Figure 2. A procedure for guiding educators through a data-driven instructional decision making process (Mertler, 2007).

the most attention. I then suggest identifying one or two of

those (and they do not have to be the ones at the top of the list) that that then become the basis for engaging in a formalized systematic process in order to critically examine how or what might be revised in terms of instruction, reinforcement, etc. Once these have been identified, there are four critical questions to be addressed:

- Where are these contents or skills addressed in the curriculum?

- At what point in the school year are these concepts or skills taught?

- How are students taught those skills and concepts?

- How are students required to demonstrate that they have mastered those skills or that content? In other words, how are they assessed? How do we determine that they have mastered (or have not mastered) the content?

In my estimation, this part of the process requires a great deal of professional reflection. This is not something that you sit down and do over a lunch break one day. It takes some time to process answers to these questions, to critically reflect on them, and to develop a plan for revising the instruction. How are you going to change your practice in order to improve student performance? Will you teach the content differently? Will you sequence it differently? Do you want to assess students differently? Please note that there is still an element of trial-and-error embedded in this process, but I hope that it is apparent that if you follow these four steps above, you now have a process that is much more systematic than just trying things haphazardly.

D-DIDM and the Merging of Three Critical Educational Practices: Action Research, Assessment of Student Learning, and Reflective Practice

With what I consider to be this scientific approach that data-driven instructional decision making uses, I believe that we are essentially merging three critical educational practices that I value very highly and that I am very passionate about. These three educational practices that I envision being merged together into the overall process of D-DIDM are:

- *Classroom-based (or site-based) action research*,

- *Assessment of student learning*, and

- *Reflective practice*.

I want to discuss each of these separately, while keeping in the front of our minds the process of D-DIDM. Let me begin with action research. Even if you are not familiar with the process of engaging in classroom-based action research, I think that it will be easy to see how it "fits" in with D-DIDM. I define **action research** as systematic inquiry conducted by educators with a vested interest in the teaching and learning

process or in the particular setting (Mertler, 2009). First of all, realize that this is NOT research about someone else's students; it is NOT research in or about someone else's school or district; it is NOT research about someone else's course. Action research is research about *your* students, *your* courses, and *your* curriculum. It obviously has a different purpose than methods and techniques that you learned about in an introductory educational research methods course. For the most part, it is very different from the kinds of research that a lot of us in academia conduct and publish. That is not to say that you cannot publish action research, but in most cases, we are studying educational systems that are not our own. They are not our own students; they are school districts in which we do not work. I am not saying that we do not have an interest in those; we certainly do. However, I do not think that we have the same kind or level of (vested) interest as somebody who is studying his/her own practices directly. Therefore, the purpose of action research is to gather information about how that instruction is delivered, how students learn, all of the components of the teaching and learning process, but in our own settings. One of the characteristics that makes it unique—and, I think, makes it highly valuable for every professional educator—is that it is research done by educators for themselves and not for other, external reasons or purposes (Mertler, 2009). Those of us in academia publish and conduct research on topics that we are certainly interested in, but we also have other driving forces that "encourage" us to publish—promotion and tenure, to name one. Let me reiterate: I am not saying that the result of action research studies cannot be published and disseminated—I would strongly urge that you do that. But, the real benefit of action research—and, therefore, of data-driven instructional decision making—is that the results are going to benefit you and your students directly.

As most of you know, action research is a cyclical process—identify something, implement it, assess it, revise it, implement it again, assess it, revise it, implement it again, and so on. Action research is also very systematic, and since it is a systematic examination of your own practice, it is by definition also reflective. I am hoping that all of these things are starting to come together. Now, I don't think that action research is a *requirement* of a data-driven instructional decision making process, but it can strongly support it largely due to the fact that they can be integrated so nicely. Those who have studied action research know that there are numerous models of action research that have been floating around for decades. I offer my contribution (Mertler, 2009) in Figure 3.

Notice that the first cycle is comprised of a four-stage process, a process very similar to one that we examined earlier. The process begins by planning what is going to be done. This is followed by taking some sort of action, usually implementing the project. Something is then developed from the results of that implementation. What I am referring to here is your reflection and the development of a plan for revision. After completing that state, the entire process is reflected upon. The ultimate goal of the development of a

plan and the associated reflection is for that information to serve as the impetus for planning in the next cycle. The action research process continues through a next cycle, or spiral of successive cycles. Personally, I do not like to think of action research as ever ending—its focus may change, or move in a different direction, but it does not end. A more detailed diagram of my model is presented in Figure 4.

In this figure you will notice that the same four stages— i.e., planning, acting, developing, and reflecting—appear across the top. The specific activities within each of these stages are undoubtedly familiar. During the *planning stage*, the topic is identified and limited in scope, related information is gathered and literature reviewed, and a research plan is developed. The *acting stage* is the point in the process when data are collected and analyzed. The *developing stage* comprises the development of an action plan; in other words, what happens from this point forward with what has been learned from the action research study? In the final *reflecting stage*, different levels of reflection can lead to various interpretations. Certainly, professional reflection can be personal and individual. However, I think reflection can be highly valuable if it is a process done collaboratively with colleagues. This might be as simple as bouncing ideas off of other people, or asking them for some advice or suggestions on some things that you want to try. Note that this does not mean that you have to follow their advice, but view it as yet another source of information that you can use.

The second important educational practice is assessment of student learning. *Assessment of student learning* involves all activities undertaken by teachers, by other educators, and by students themselves in an effort to assess student performance. There is a very important distinction here because these are not necessarily activities that educators are doing

to the students. Assessment of student learning is something that should be done *with* students. Engage them and include them in the assessment process, through which additional sources of information are utilized to provide evidence upon which decisions can be based. This becomes part of a diverse assessment system. Designing this type of student assessment system can very, very effectively support the use of data-driven instructional decision making as a process. My argument here is that the more student information and data that we have, the better informed our decisions are bound to be. I would be remiss if I failed to note that this is not a guarantee—all of this information must still be compiled, made sense of, reflected upon, and then decisions made about where to go in the future.

The third, and final, component is reflective practice. I define **reflective practice** as a process whereby educators study their *own* teaching methods in an effort to determine what works best for *their* respective students. Many of the components contained in action research make it, by nature, a reflective process. One of the true benefits of reflective practice is that it really is a guiding force in one's own professional development. It permits educators to essentially design their own professional development that is meaningful, applied, and continuous. They are looking for resources to help answer their own questions about their own students, teaching, situations, settings, etc. I think what it does is foster a level of professional learning that is highly valuable, primarily because it is very meaningful and it is on-going. I believe that it is ongoing because, if it is incorporated into an action research process, it never really ends; it just goes through iterations or cycles. There is so much overlap between the notion of reflective practice and action research that they almost become one in the same. Of course, one can be reflective without engaging in action research, but blending them
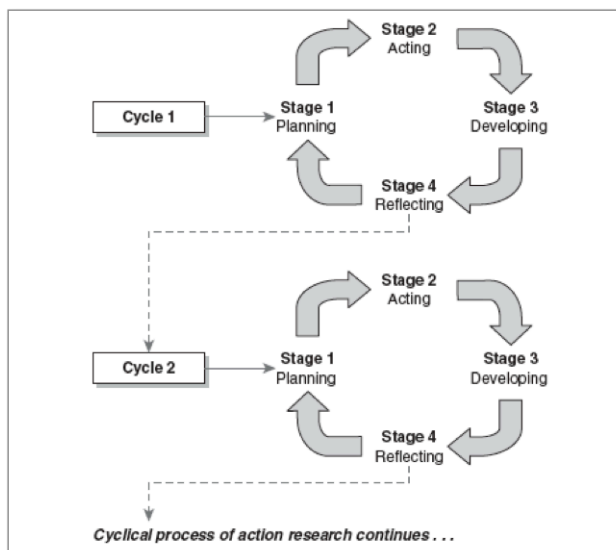

Figure 3. The process of action research (Mertler, 2009).
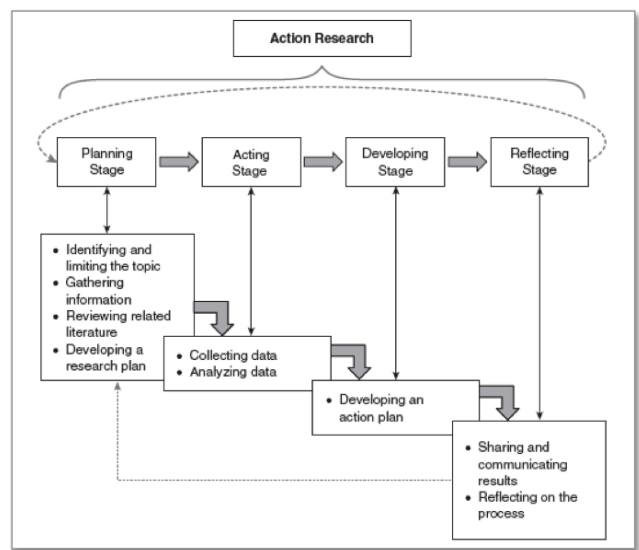

Figure 4. The integration of two organizational schemes for the step-by-step process of action research (Mertler, 2009).

together really gives you a sound process for professional development and learning.

At this point, I'd like to introduce a new model. I have shared several models in this presentation that are my variations on processes or ideas that have been studied for years. However, to my knowledge, I have never seen a visual depiction of data-driven instructional decision making. I wanted to try to find a way that I could illustrate my conceptualization of the integral nature of these three educational components—action research, assessment of student learning, and reflective practice—in an overall process of data-driven instructional decision making. My idea is that we take these three educational "procedures" and merge them into a single process called *data-driven instructional decision making*, or *D-DIDM* (see Figure 5).

I want to argue that we need to introduce and routinely, continuously engage in this process within our classrooms, with our students, within our respective educational settings. I realize that there are no guarantees—and I am not in the business of making guarantees—but I firmly believe that this process has got to lead to better instruction, better learning, and more productive students coming out of our classrooms.

Considering this new, integrated process of data-driven instructional decision making, let me address what I see as the critical roles of both researchers and practitioners. Beginning with researchers, I think again that we have a *primary* responsibility to improve teaching and learning at all levels. We need to do this through systematic inquiry. That is what

Figure 5. An integrated model of D-DIDM.

we do anyway; we simply need to apply it *directly* to the teaching and learning process. Essentially, I think that we need to *model* the overall process of data-driven instructional making, as well as its "contributing" processes (i.e., action research, assessment of student learning, and reflective practice) for educators who may be uncomfortable with these concepts. There are a lot of educators out there who fall into this category, who are uncomfortable with this over-arching process and each of the three individual components. They tend to be uncomfortable for a lot of reasons. They do not like statistics and they believe that numbers are unavoidable in the process. They do not like the word "research." Researchers have a responsibility to help educators at all levels to be more comfortable with D-DIDM.

Along those same lines, I think practitioners have a primary responsibility to improve teaching and learning at all levels through systematic inquiry; the only thing that may be different here is that we are referring to the improvement of their own practice. To reiterate an earlier point, I believe that this broad notion of data-driven instructional decision making and incorporating action research and reflective practice is a *perfect* fit for practicing educators. There are reasons why all graduate students in educational programs take research methods. It is not to punish students; it is not to make students jump through hoops for no apparent reason. The reasons include the fact that a graduate degree is a research degree; we are teaching skills that we expect educators to use in schools and other settings. This is what action research is all about.

The other thing that I would suggest for practitioners is to work with colleagues for whom some of these ideas might be new or foreign or just plain frightening. They have to see the importance of it, the potential benefits of it. There is a question that I am repeatedly asked when I talk about this with teachers. It begins like this: "Okay, you want me to do action research in my classroom, you want me to collect all of this additional data, and then you want me to sit back and reflect on it, right? Well, I cannot do all of that during my lunch period or planning time, so when am I supposed to find time to do this? I don't have time in my day to do this." First, I recognize that this is a valid point. Second, however, the sincere response that I give them is that they should not see this as being some sort of extra responsibility for which they are not getting paid. (I have had numerous teachers say this to me before: "Why would I do this when I am not being paid to do it?") At the risk of sounding extremely sarcastic (and, sometimes, it comes out that way!), I usually respond with something like: "Well, I don't know. *Why* would you want to be a better teacher, especially if you're not getting paid to be a better teacher?" If educators make D-DIDM part of their daily work routine—which does not mean that you have to do it every day, but if it becomes part of their professional routine—then, it becomes part of annual professional development; it just honestly becomes part of the
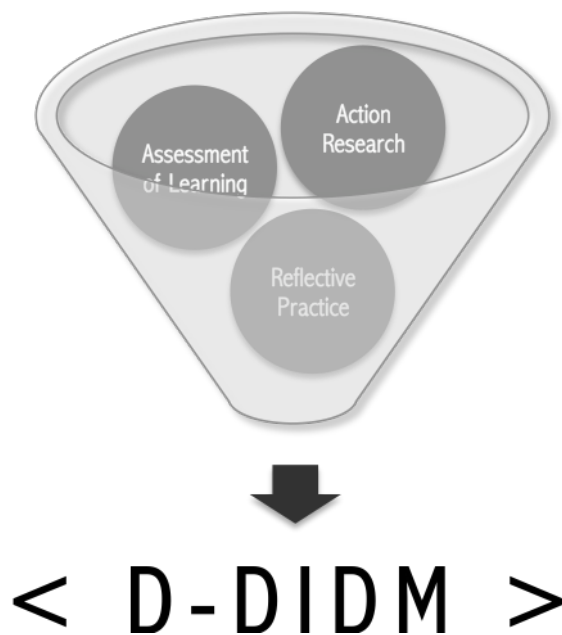
job of being an educator. It requires a different mindset…a different approach to the work of being an educator. My "off-the-cuff," semi-serious response that I sometimes give people who ask me these types of questions is, "With the potential benefits of engaging in a process like this, how can you afford *not* to try it? How can you honestly afford *not* to see how it works for you?"

I have mentioned on a couple of occasions about working with colleagues, or researchers working with practitioners, so now I would like to add one final element to my working model of D-DIDM. If you notice, a lot of the responsibilities of researchers and practitioners overlap; they are very similar. I think those responsibilities can be merged very easily. One of the benefits of sharing the responsibilities is that it brings together different perspectives, ideas, experiences, and resources. Therefore, I am going to add one more thing to my model: *collaboration* (see Figure 6). If we engage in D-DIDM as a collaborative venture, working together toward a common goal, that is where I think the *real* benefits can be realized. You can certainly do all of this individually, but there is nothing that says that you cannot work together. Honestly, this becomes a perfect situation for the development and implementation of Teacher Learning Communities, as a means of fostering this professional collaboration. Revisiting our model, let us now add "collaboration." So, we actively engage in this singular process of D-DIDM, conducting classroom-based action research, which utilizes student assessment data and other related information, all the while reflecting upon everything we do as we go along, integrating collegial collaboration whenever appropriate. This is my conceptualization of the process of data-driven instructional decision making.

Let me offer a couple of closing thoughts. I honestly do not think that this is a new practice or a new process. I think educators have been doing this in one form or another for a long time. I just do not believe that it has been as systematic as it could be, as systematic as I would like to see it. Furthermore, to my knowledge, I do not think it has ever been described as a comprehensive process as I have envisioned and described it today. And, it certainly never had a catchy acronym! Now, we have one—***D-DIDM***.

Seriously though, I do want to caution anyone wanting to work with the process of D-DIDM because I think that it is very easy to become overwhelmed. I think that it is very easy for educators at just about any level to develop a lengthy list of potential improvements or revisions. Then, all of a sudden you have twenty or so things that you want to address. That is not realistic; there literally is not enough time in the day to do that. Also, if you try to incorporate too many things into the revision of your instruction (or whatever you are critically examining), when you evaluate the impact at the end of the process, you are not going to know what may have caused any improvements, or what did or did not work, because you simply have too many confounding things going on. D-DIDM needs to be done using a systematic, but also manageable, approach. Design it and engage in it so that you can take it piece by piece. There is no reason to go solo on this; collaborate with colleagues at any level that you think is appropriate, even if you just want to bounce ideas off of them. But remember that data-driven instructional decision making and all of its components represent an ongoing, cyclical process. It takes time; do not expect to see incredible improvements and changes in what you do after your first cycle.

Finally, why did I begin this paper by mentioning the definition for "mindset?" Engaging in a process of D-DIDM requires a change in one's mental outlook and in one's attitude, so that its practice becomes habitual, almost second nature. It should become part of the practice of your professional routine. If you are patient with the process, I truly believe that you will see rewards from your professional investment.

References

Mertler, C. A. (2007). *Interpreting standardized test scores: Strategies for data-driven instructional decision making*. Thousand Oaks, CA: SAGE.

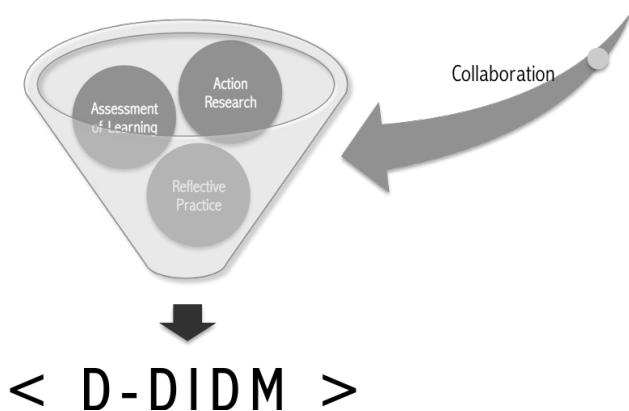Mertler, C. A. (2009). *Action research: Teachers as researchers in the classroom* (2nd ed.). Thousand Oaks, CA: SAGE.

Figure 6. An improved version of the integrated model of D-DIDM.