This paper describes the history of the Worldwide Instructional Design System and current thinking on the philosophy of performance-based learning (PBL). Couched within evidence that PBL produces positive effects in student achievement, the paper is organized around three common questions related to performance-based learning: Does it limit academic freedom? How does it address higher order thinking skills? And, does it deter learners from asking why? Finally, the issue of using technology as a tool for curriculum development is addressed, along with a summary of findings related to successful implementation.

THE HISTORY OF WIDS

WIDS is the Worldwide Instructional Design System. The development of the WIDS model and software came out of a collaborative effort involving primarily educators from the 16 Wisconsin Technical Colleges and the Wisconsin Technical College System Board. The University of Wisconsin System, Wisconsin K-12 educators, and industry representatives were also involved in early discussions, starting in 1991. Known as the WIDS Advisory Team, these educators gathered regularly to share best practices using competency-based educational philosophies practiced by educators at that time. The rationale was based on the idea that a competency-based approach to instructional design was appropriate for any level of education and any discipline – which has proven to be true over time.

In 2006, Tomlinson describes this approach as a "backward design process for curriculum planning." She asserts that "deliberate use of backward design for planning courses, units, and individual lessons results in more clearly defined goals, more appropriate assessments, and more purposeful teaching." Huba and Freed use a similar phrase in "design backward and deliver forward" (Huba & Freed, 2000, qtd. in Warren, 2003). They believe that students "should experience a complete, coherent curriculum" and by designing backward, the institution formulates "learner-centered outcomes that describe what graduates should know and be able to do" (p. 107). Additionally, Stiehl and Lewchuck's model begins with the end in mind by suggesting that criteria be developed for assessment tasks, so "the learner will know what it will mean to complete this task successfully" (Stiehl & Lewchuck, 2000, qtd. In Warren, 2003). All of these current models point to specifying performance expectations in advance of instruction; this is what WIDS defines as performance-based learning.

As the accountability movement gained momentum in the early 1990's, the WIDS Advisory Team began to determine what a good performance-based design model would look like. Focus group sessions were conducted to define a common structure and terminology around which to specify learning outcomes and performance criteria for

both academic and technical courses. Organizations such as the Wisconsin technical colleges were already competency-based in that learning outcomes were derived from tasks performed on the job. The colleges used a variety of strategies to analyze job tasks (DACUM, for example) and included industry standards when necessary. In programs offering licensure, colleges were required to meet external standards and show where learning outcomes addressed those standards. Such drivers were not new to colleges, but a vehicle by which to efficiently design, align, and document performance was missing. A common design framework was badly needed, and ultimately a technology tool. Finally, after two years of team meetings and guidance from a growing WIDS staff, the WIDS model was created and published in 1994, along with the first version of the software. The software today reflects the same powerful concepts of performance-based learning, but it has adapted to include program design, DACUM, and a matrix reporting tool called Analyzer.

PERFORMANCE-BASED LEARNING

The basic premise of performance-based learning is that learners are informed of performance expectations in advance of instruction. Expectations are defined in terms of learning outcomes; it is assumed that students enrolled in any learning experience have a right to know those learning outcomes. There are, however, educators who think of the learning process as more subjective, where students sit at the fount of knowledge for the pure joy of learning, and the value of the learning is measured in esoteric terms.

Reeves calls this the "Oz effect" where particularly "in matters of literature, philosophy, or social science … proficiency is no longer clear, and the definition of acceptable student performance must rest with the judgment of experts." In other words, "the great and powerful Oz retains power as long as there is no Dorothy and Toto to look behind the curtain."

Michael Wesch, cultural anthropologist at Kansas State University, tosses the traditional teacher-centered approach out the window as he claims students today retrieve knowledge much differently than even five years ago, accessing through laptops, cellphones, and iPods. Traditional classrooms "built to re-enforce the top-down authoritative knowledge of the teacher are now enveloped by a cloud of ubiquitous digital information where knowledge is made, not found." Behind this massive shift away from such a narrow focus on information, "there is still the question of 'what' is to be learned" (Welch, 2009).

The performance-based approach to instructional design has evolved over time. Initially, the term "outcome" emerged from Tyler, Bloom, and Mager and their early work in

developing behavioral objectives. Some valid criticisms of these early approaches include an over emphasis on writing learning outcomes, in many cases ignoring the implication of the outcomes, such as writing them for the sake of outcomes and not determining how they impact teaching strategies, learning styles, and assessment. In other cases, learning outcomes were written at low cognitive levels, according to Bloom's taxonomy (Bloom, 1956). An individual course, for example, might have 30 or more low-level outcomes that result in knowledge-based testing and an emphasis on "checking off" competencies rather than high level cognitive performance.

As PBL practice has evolved, these issues have been addressed. Proponents of PBL philosophy today emphasize the importance of writing outcomes that reflect comprehensive performances, using verbs from higher levels of Bloom's taxonomy. Outcomes written at these levels require high level cognitive performance rather than the regurgitation of facts and information.

Similarly, in recent years, emphasis on PBL has shifted from merely writing bunches of learning outcomes, to authentic assessment of high level outcomes, both at the course and program level. The rationale: if teachers and educational institutions are going to quantify student learning using grades, then those grades ought to be backed up by evidence of student performance related to defined outcomes. No matter what learning environment, instructors have to quantify student learning with a grade, and students pay for the privilege of attempting to earn that grade.

Such letter grades have lost meaning over time, however, and additional measures are in place for documenting student success. Some of these include numbers of students graduating, what skills they've learned as described in a competency report card, and how they are received by the outside world. It is fair for institutions to clearly communicate to students how they plan to determine a grade—what learning outcomes they expect the student to achieve, and what standard of performance they will use to determine the grade. A performance-based approach enables the instructor to clearly define the learning outcomes for a course along with the standards of performance and to share this information with the student. Performance results can then be aggregated, providing valid data for institutional assessment.

Some would argue that requiring teachers to write learning outcomes takes away academic freedom, requires teachers to "dumb down" their courses, and eliminates intelligent discussion from the classroom. In fact, well written outcomes and performance standards can *enhance* the level of critical and creative thinking, discussion, and quality of intellectual pursuits in the classroom. Building authentic learning environments and assessment can leverage these pursuits, and in the case of performance-based learning, promote and diagnose learning.

WIDS DOES NOT LIMIT ACADEMIC FREEDOM

As standards of performance and accountability gain more and more steam in American education policy, it is becoming difficult to defend educational goals that are ill defined or predetermined only in the instructor's head.

For example, the American Federation of Teachers union recently endorsed "the idea that the nation should set a common definition of what students should know and be able to do" (Hoff, 2009) in light of international benchmarking and our current global society. The first ever set of national standards for K-12 education are currently in development, a strong indicator of support for common core outcomes in education.

French 101 leads to French 102 which leads to French 103. Math concepts taught in Algebra 2 may be applied in Engineering 106, and report writing skills learned in communication may be the key to success in sociology or economics.

Academic Freedom vs. the Greater Good

Another benefit to stating learning outcomes publicly is that silos are eliminated; courses are intertwined with others; they relate to a sequence and program configuration, or they may serve as a transfer course. It is well known that in higher education, courses are taught in sequence to achieve an end result of a diploma, certificate, or degree. Rarely are courses taught independently from one another, and perhaps in these cases individual instructors have the freedom to completely define a course however they want. But in most cases, courses are not independent. Some or all of the courses in an Associate's degree at a community college may be transferrable to a four year college— that is if the outcomes meet entry requirements of the four year institution. If there are no outcomes specified for such transfer courses, how is the decision made to accept the transfer credit? Is it an arbitrary decision made by a lone professor?

In cases where sequencing in a program is important to learners, so they do not have to repeat the same course at a similar institution, instructors have an obligation to each other and their learners to coordinate the learning outcomes. They must ensure that students experience a smooth transition and skill progression throughout a degree or learning experience, and that the instructor in French 3 doesn't have to re-teach what should have been taught in French 2. This partnership depends on clear communication and high quality performance-based course documentation, such as common program outcomes, course competencies, and core abilities.

ADDRESSING HIGHER ORDER THINKING SKILLS IN CURRICULUM

Educators in community and technical colleges are taking on a sense of mission that goes beyond teaching specific skills or knowledge in a particular occupational area. Defined by some as "lifelong learning skills" (Healy, 1998) these transferable skills or "core abilities" as named in the WIDS model, are essential to an individual's intellectual, physical, and emotional success regardless of occupational or life role.

In Silva's "Measuring Skills for the 21st Century" report, she says "decades of research reveal that there is, in fact, no reason to separate the acquisition of learning core content and basic skills … from more advanced analytical and thinking skills" (2008).

The challenge to broaden learning to include higher order thinking is that there is no exact formula for incorporating these abilities into curriculum. The first step, Healy notes, is to banish them as "invisible curriculum" and explicitly name and post them. Healy describes these types of skills as critical thinking, effective communication, collaboration, and community contribution. She believes the purpose of education is to enable learners to develop intellectual and personal worth as well as practical skills. The fact that these skills sometime seem ambiguous, abstract, and even controversial doesn't help either.

Educators have not ignored lifelong learning skills. Many colleges already reflect lifelong learning as a core value in their mission statement. Few colleges consider these skills as unimportant, even in relationship to academics. Colleges are perfect arenas for social interaction and fertile ground for the development of skills useable outside a discipline or classroom.

Typically, however, lifelong learning skills are not stated at the course level and therefore, not planned into the curriculum. A traditional curricular format has no vehicle for explicitly stating and assessing these skills. As a result, these essential skills have been over-shadowed by content-specific competencies.

WIDS helps educators specify and integrate these skills into the curriculum in a systematic way. By designing, linking, and assessing them at the course level, teachers bring the broad goals of the mission to the frontlines of the classroom—where

learners have a chance to apply them in a variety of contexts. For example, students involved in group work address the skill of "work cooperatively." Students practice working together to achieve a goal, and they might be evaluated on their ability to work as team members *in addition to* their academic or technical skill. They can "learn effectively" by seeking and interpreting information rather than relying on information the teacher provides. Students could also self-assess, using a rubric designed in WIDS, as to how well they have demonstrated these skills throughout the course. They could provide feedback about the skills to one another and reflect.

Incorporating lifelong learning skills into a classroom begins by stating the skills explicitly. Teachers can also model them, weave them into their methodology, and provide opportunities for teacher, peer, and self-assessment of learner progress towards achieving the skills. Whatever the discipline, these skills can be addressed. WIDS is used as a means toward integrating these skills into everyday learning, and both the model and software allow for incorporation and documentation of them. The Core Ability Library in the software is pre-loaded with concrete Core Ability examples and indicators. Users browse through the library, choosing and linking these skills to programs, courses, and competencies, or they can develop their own using the Verb Library. Ideally, these skills are incorporated into performance assessment, by adding the indicators to a rubric or checklist. Learner behavior is then observed and evidence of the Core Ability, such as "communicate clearly", is documented.

A question asked over and over is, "Why do students need to know this?"

WIDS HELPS ADDRESS THE "WHY"

WIDS consultants have worked with thousands of educators since 1994, helping them write learning outcomes, shifting from knowledge-based assessment to authentic performance-based assessment. Instructors new to developing curriculum often write outcomes that reflect low level cognitive performance, primarily knowledge and comprehension. However, when instructors are asked to describe what they expect of students in relation to that outcome (student performance) they often describe performance that reflects a much higher cognitive performance than what they initially defined. WIDS helps instructors write learning outcomes that reflect the high level of cognitive performance they expect in their classroom. To implement this kind of design, the WIDS software provides libraries of verbs—sorted by Bloom's taxonomy--and performance standards to aid instructors as they write and examine their own. The software produces assessment tasks, with practical rubrics or checklists, which learners use as a guide during the assessment process.

In fact, WIDS professional development workshops encourage instructors to write learning outcomes that incorporate the "why" questions, and to assess the student's ability to ask, research, and formulate answers to these questions. For example, competencies from a philosophy course can encourage questioning and critical thinking:

Philosophy Competencies:

- *Assess the philosophical base for positions on a variety of personal and societal norms, values, and political structures*
- *Explain how one's metaphysical and epistemological framework affects the positions a person takes on a variety of life issues.*

As instructors use WIDS to develop learning plans and assessments for target outcomes, there are plenty of opportunities for them to build-in engaging discussion and exploration of the big "why" questions. In fact, one of the main components of a WIDS Learning Plan is the overview, where instructors explain why a particular lesson applies to the learner. The WIDS Learning Activity Library provides instructors with a variety of Classroom Assessment Techniques (CATs) to capture student expression of thoughts, questions, and areas of confusion encountered in the classroom. These techniques, supported by WIDS since their conception, are "strongly associated with improved student performance" (Marzano, Pickering, and Pollock, 2001).

Similarly, by encouraging instructors to write learning outcomes and performance standards that reflect student performance they actually expect, instructors can write "why" questions accordingly. WIDS is not the limiting factor. In fact, instructors begin to analyze their own work when writing outcomes, and during this process the outcome itself may change. Instructors may realize they are teaching content because of personal preference or tradition, and they begin to ask "Why?"

The competency below and its performance criteria illustrate how instructors can define expectations and leave the learner plenty of room to explore and develop their own ideas and points of view:

Contemporary American Society

Competency: Interpret current trends impacting work and government

Criteria:

- *Interpretation recognizes characteristics of a trend*
- *Interpretation identifies trends affecting work and government as institutions*
- *Interpretation presents generalizations that encompass the most essential aspects of trends*
- *Interpretation explains generalizations accurately*
- *Interpretation draws conclusions that follow logically from the explanations given*
- *Interpretation is in historical perspective*
- *Learner integrates information from relevant and reliable sources*

Other competencies that involve concepts and critical thinking allow more wiggle room for students to challenge expectations. The WIDS software comes pre-loaded with sample competencies that are less occupationally-driven. Here is an excerpt:

Model Competencies for Applying Concepts and Critical Thinking

Competency: Consider two or more perspectives and the reasoning behind them on an issue [topic, recommendation, situation, etc.]

Criteria:

- *Analysis identifies an issue [topic, recommendation, situation, etc.] on which there is disagreement*
- *Analysis articulates explicit points of disagreement that cause conflict*
- *Analysis describes one position and the reasoning behind it*
- *Analysis describes one or more opposing positions and the reasoning behind them*
- *Analysis describes the errors or holes in the reasoning for each of the positions*
- *Analysis outlines the learner's personal position on the issue*
- *Analysis defends the rationale for the learner's personal position*

WIDS AS A TECHNOLOGY TOOL

By providing libraries of verbs, outcomes, and performance standards, technology increases efficiency in curriculum development. As with any authoring system, there is value in creating efficiencies, whether it be for one instructor developing a syllabus, or for an entire department working together to define program outcomes and

assessment. It is tempting, however, to become so engaged in technology that the quality of design suffers. WIDS has always cautioned instructors to think carefully about what goes into the software—or any system for that matter. On the other hand, instructors should not use WIDS as an excuse to avoid analyzing their curriculum for relevance, validity, and fairness. At public institutions, transparency of learning outcomes and assessment is essential, and, as stated earlier, new accountability standards make documented evidence of success a requirement. With mounting external forces impacting local curriculum, WIDS should be thought of as a rescue line, saving instructors and administrators from the hassle of organizing volumes of curriculum data.

The WIDS Advisory Team mentioned earlier provided a unique test bed for software development. The group, made up of frontline instructors and curriculum designers, used the software as it was being developed, gave feedback to programmers, and advised the WIDS staff on future software improvements. The group quickly learned that without a common design language, software and curriculum development discussions became difficult. Focus groups were conducted repeatedly to learn of specific instructor needs related to technology, and their input still guides development today. Having a built in user base, practitioner input on both the model and software, and a perfect testing ground makes WIDS different than any other system currently available. No other company can claim to have this unique development history.

Instructional Alignment Theory

Using the technology correctly, WIDS software causes instructors to think about what they are asking, why they are asking it, and how they can best connect learning activities and assessments to target outcomes.

Technically, the software provides a framework around which learning outcomes and assessments can be identified, connected, and shared—a physical "alignment" of instructional design. This instructional alignment idea, supported by decades of research, involves "congruence between stimulus conditions of instruction and stimulus conditions of … assessment" (Cohen, 1987). It assumes there is purposeful connection between assessment and instruction. Cohen found this alignment to consistently generate large effects, "which is probably why the idea of instructional alignment is so well-entrenched in the conventional wisdom of instructional designers" (Cohen, 1987). Recent research builds on Cohen's findings, and provides "strong evidence from scientifically based research that aligning various components can have positive and significant effects" (Edvantia, 2005). The WIDS software incorporates these ideas and

helps educators think about links between competencies and assessment, competencies and instructional activities and materials, and between assessments and instructional activities and materials. This way of thinking, supported by Anderson in 2002, empowers instructors to examine and enhance their curriculum and learn of their intentions when analyzing instructional activities. The software becomes the vehicle around which to ask:

"What's worth teaching" or "What's worth assessing?" (Cohen, 1987). Cohen bravely admits:

> Teaching what we assess, or assessing what we teach seems embarrassingly obvious (Cohen, 1987)

The robust design model supporting WIDS software considers instructional alignment theory, and provides for development of both technical and academic skills; it provides a platform around which the two can mesh. Going beyond low-level objectives, WIDS gives educators the tool to develop performance standards, learning objectives, and assessments—showing how they fit together for the learner. Effective learning activities stated in a Learning Plan motivate learners, allow for comprehension and practice, and encourage application of knowledge. Designing engaging activities using the learning cycle is promoted by WIDS. The Learning Activity Library is available to software users as they consider ways to improve their learning activities and transfer student learning to work or life role applications. This particular element was informed by the work of Dr. Ruth Clark; WIDS workshops have always included discussion of the cycle and how each stage facilitates the learning process.

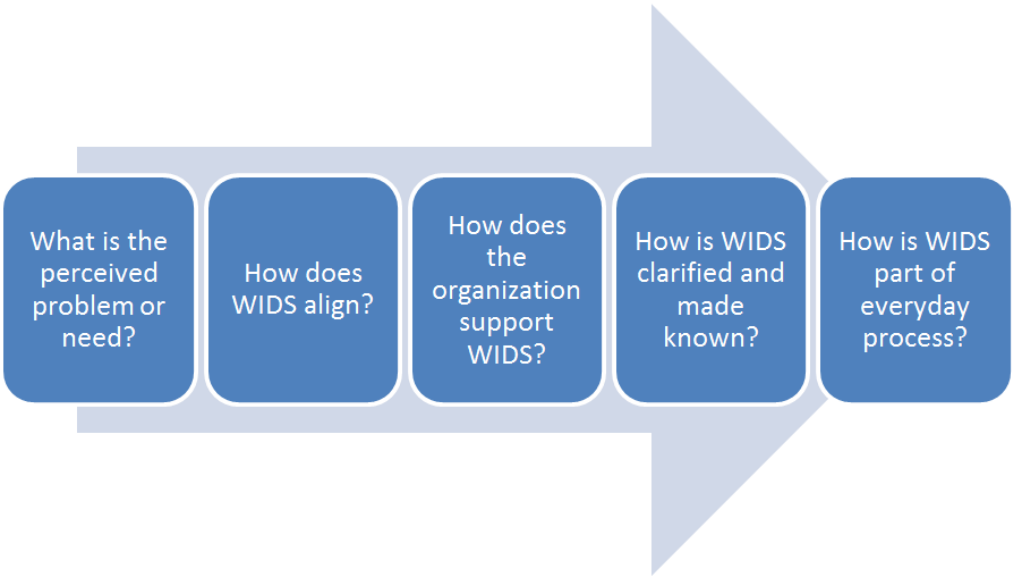
Just as new technologies are used by students, instructors have new technologies for curriculum design. Any tool or strategy that can help streamline data, information, and documentation is in demand—by both instructors and managers. Because WIDS is a relational database, once initial course and program design is complete, the ability to access that information and display it in a variety of ways—to a variety of audiences—is easy to do. Instructors faced with an accreditation visit, for example, use WIDS to produce documentation for learners *and* documentation required for accreditation. Within their web-based tool is the ability to manage all curriculum documentation for easy accessibility – link learning materials to activities or store outcome matrices and assessment documentation as evidence in assessment planning and analysis.

Diffusion of Technology

Decades of diffusion research track the rate of technology adoption over time, and

confirm a specific, repeatable adoption curve. Those who jump on board with a new idea, for example, are called early adopters, where other groups within an organization need more time to analyze the impact of innovation—before they decide to adopt. Rooted in sociology and the work of Everett Rogers, this impact is seen as social change. The larger social system "is a kind of collective-learning system in which the experiences of earlier adopters, transmitted through interpersonal networks, determine the rate of adoption of their followers" (Nickel, 2005). Clearly, the decision to use technology such as WIDS is complex.

A 2005 dissertation reviewed the adoption of WIDS software and the diffusion process of WIDS in a technical college. It revealed that "organizational structures are inevitably involved in educational adoption decisions" (Nickel, 2005). The study aimed to understand how to effectively introduce WIDS to organizations, plus it identified phases in the decision-making process.



Adoption of WIDS by an Organization

Specific strategies to expand use of WIDS within an organization involve first focusing on the innovators, then the early adopters, the early majority, and so forth, using each "captured" group as a reference base for marketing to the next group. This is based on the tendency for "pragmatic people to adopt new technology when they see other people like them doing the same" (Moore, 2002). Organizations with successful implementations of WIDS use specific tactics to attack the mainstream group, where members exhibit fundamental differences in the way they approach WIDS. Tactics include participation of management and hands-on involvement of a champion who initiates attempts to influence others.

No matter what technology is chosen, there is a predictable pattern of social change that will result from its introduction. It is a complicated process; the technology alone cannot be blamed, as the meaning of the innovation itself (WIDS) is constructed over time through a social process of human interaction.

CONCLUSION

The goal of this paper was to highlight the unique history of WIDS and update research references regarding the soundness of performance based learning. Answers to three common questions were discussed: WIDS does not limit academic freedom, it fosters critical thinking, and inspires both learners and instructors to ask and discover what?, why?, and how?. Applying content expertise and teaching experiences, instructors and instructional designers turn to WIDS as a tool to help them in their everyday design challenges. Specific strategies for implementing WIDS technology were introduced as they relate to the innovation process within an organization.

WIDS is useful and efficient for meeting the practical needs of frontline educators who commit to learning-centered education and continual improvement of teaching and learning:

- The WIDS model provides a common language for learning outcomes and related information. Using a common language and performance-based model is best-practice communication about what is really being taught and assessed in courses and programs.
- The WIDS software provides a framework along with a variety of libraries, banks, and other resources to assist instructors as they design curriculum in occupational and academic disciplines.
- WIDS is a tool for the strategic planning of learning, including curriculum alignment and program assessment.

The value of WIDS is seen to those who value demonstrated learning and recognized teaching. With a unique development process involving broad instructor-input and continuous user feedback, this product was truly developed by educators for educators.

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