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## What's the DEAL? Program Level Examination of Reflection Design

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*The DEAL model of critical reflection (Ash & Clayton, 2009a) was explicitly designed to help improve the quality of learning and practice in applied learning. Heretofore, the DEAL model has been used at the level of the individual student or faculty member as learner. To improve understanding and implementation of critical reflection in a university's international service-learning (ISL) program, researchers utilized the DEAL model of critical reflection to reflect on practice at the program level. Building on the comparison of multiple instances of ISL in Whitney and Clayton (2011), particularly the important variables of program design related to reflection indicated there, the researchers integrated these and other principles of promising practice into a user-friendly tool that can be applied to the design of reflection. Researchers then piloted its use by applying it to three (historical) cases of reflection design in ISL, analyzing archival data—specifically reflective practices from three program years in each decade of Kansas State University's twenty-plus-year IST program. Service-learning programs rely on high quality critical reflection to help students make meaning of their experiences; service-learning programs must design reflection to support and advance that meaning-making, and therefore, must examine reflection design.*

Applied learning pedagogies are considered high impact educational practices. Service-learning programs in particular promise transformational learning experiences, often related to educational goals of engaged citizenship and personal and social responsibility (Kuh, 2008). As institutions seek to invest limited resources wisely, even programs

with considerable institutional history must expect to demonstrate impact and value. Being intentional in reviewing a program can demonstrate how and why programs have evolved and what further change may be expected moving forward. Applied learning programs look to learning outcomes for evidence of their impact. Service-learning students often demonstrate their learning through critical reflection; therefore, service-learning programs have a special interest in examining their approaches to reflection, how reflective practices have evolved, and how effective programs have been in meeting learning outcomes.

Although critical reflection is essential for high quality learning and practice in applied learning of many forms, this study considers reflection design in service-learning in particular, specifically international service-learning (ISL), using one long-standing ISL program as context. For over twenty years, the International Service Teams (IST) program has been a part of Kansas State University's service-learning landscape. IST sends interdisciplinary teams of students to developing communities internationally for service-learning and community engagement work. Over 300 students have served in 18 countries on five continents, engaging in more than 90,000 hours of service in international communities. It is a unique program in its organization and format (program and teams are student-led; participants are engaged throughout a full year of service-learning related to a summer experience abroad) and also its longevity, with twenty-three years of continuous operation.

Throughout the long history of the program, one of the most significant changes has occurred in the implementation of reflection. Reflection is understood to be an essential component of service-learning (Deeley, 2010; National Service-Learning Clearinghouse, 2010; Welch, 2010; Whitney & Clayton, 2011), as it is the process through which meaning is made from experience (Ash & Clayton, 2004, 2009a; Bringle & Hatcher, 1999; Dewey, 1910; Eyler, Giles, & Schmiede, 1996; Saltmarsh, 2010). Noting that it is critical in domestic service-learning as the "primary mechanism that generates meaningful and powerful learning," Whitney and Clayton (2011) suggest that in ISL particularly,

reflection serves as a needed safeguard against some of the problematic potential outcomes associated with students being

directly involved in communities with which they are unfamiliar, including misinterpretations of the motives and behaviors of others, reinforcement of entrenched stereotypes, and the tendency to make insufficiently informed judgments across cultural difference. (p. 148)

Over the twenty-plus years of IST, the program has gathered data that demonstrate the variation and evolution of the reflective practices implemented by the program. To improve understanding of and implementation of reflection in the program, researchers sought to apply the DEAL Model of Critical Reflection at the program level. What might we learn if we *described* reflective practices at different points in the program's history; *examined* those reflective practices, looking for patterns and causes of variation; and *articulated learning* about program design related to reflection?

This study utilizes the DEAL Model of Critical Reflection to reflect on a program's design to determine how reflection has been structured over the program's history and the extent to which varying iterations of reflective practices meet what scholarship supports as current best practices. Developing and piloting a tool based on those practices provides not only important information regarding this particular program's design of reflective practices but also informs refinement of the tool for use by other researchers and practitioners applying DEAL at the program level.

## LITERATURE REVIEW

ISL programs provide a global context to social issues addressed during service experiences abroad, serving as a powerful form of international education. ISL programs share ties with study abroad experiences in that students are able to go abroad through opportunities offered by higher education institutions. However, service-learning programs enhance the international experience by providing students with the opportunity to connect directly with local residents to build a better appreciation and understanding of the culture (Bringle & Hatcher, 2011). Universities operate these ISL programs for several reasons, including increased intercultural experience and understanding (Brown, 2011), developing students into citizens who are engaged with civic activities in their home community (Bringle, Studer, Wilson, Clayton, & Steinberg, 2011), and providing students with applied learning opportunities related to their field of study (Bringle & Hatcher, 1996).

An essential component of service-learning, reflection has generated attention among scholars and practitioners. Models for designing reflection in accordance with standards of best practice have been developed and used by practitioner-scholars, including the Campus Opportunities Outreach League's signature *What? So What? Now What?* model, Welch's (1999) ABC model (with its defining dimensions of learning including affective, behavioral, and cognitive),

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and more recently the DEAL Model for Critical Reflection (Ash & Clayton, 2004, 2009a, 2009b; Ash, Clayton, & Atkinson, 2005; Clayton & Moses, 2006; Jameson, Clayton, & Bringle, 2008; Whitney & Clayton, 2011). A rebuttal to the image of reflection as “touchy-feely introspection,” critical reflection defines a practice that is “an integrative, analytical, capacity building process” (Whitney & Clayton, 2011, pp. 149-150). Critical reflection requires participants to examine their thinking and is the component of service-learning that generates, deepens, and documents learning (Ash & Clayton, 2009a). In the inaugural issue of the *Journal of Applied Learning in Higher Education*, Ash and Clayton (2009a) presented the DEAL model as the product of a multi-year scholarship of teaching and learning project, initially developed for use in service-learning and designed explicitly in accordance with principles of good practice.

The scholarship on service-learning provides a body of well-supported principles of best practice regarding critical reflection in service-learning. Eyler et al. (1996) present “the 4 Cs” as indicators of quality reflection: continuous, connected, challenging, and contextualized; coaching was added later as a fifth “C” (Eyler & Giles, 1999). Bringle and Hatcher (1999) suggest five guidelines for effective reflection in service-learning: clearly links service experience to course content, is structured and guided, occurs regularly throughout experience, involves feedback so students can improve and develop reflective practice, and helps explore and clarify values. Zlotkowski and Clayton (2005) further refine our understanding of quality critical reflection, adding that it must be aimed at specific learning objectives, be integrative, be assessed as critical thinking, include setting goals, and generate change for the learner. Furthermore, Hatcher and Bringle (1997) identify a major gap in the field of service-learning: the lack of support in the design of effective reflection activities in service-learning courses, a gap that is remedied through intentional support for faculty and staff structuring service-learning courses. The DEAL Model as a tool responds to this gap by offering a format for designing reflection.

According to Giles and Eyler (1994), John Dewey identified early on the challenges with any experiential education by acknowledging that experience alone does not result in education, but rather the processing of an experience yields learning. The DEAL Model offers learners a process for making meaning of an experience and to build their capacity for such meaning making. Refined through several years of research and practice, the DEAL Model consists of three steps: Description, Examination, and Articulation of Learning. The Describe step invites learners to provide objective details of an experience, answering questions related to when, where, who, and what to give context to the experience. The second step, Examination, includes prompts designed to link experiences to desired learning outcomes, moving respondents from summarizing what happened to making meaning of their experience. The third and final step in the DEAL model is the production of an Articulated Learning. Prompts for this step help respondents “capture their learning in such a way as to be able

to act on it and thereby improve the quality of their learning and their future actions” (Ash & Clayton, 2009a, pp. 42-43).

The DEAL Model was explicitly designed to help improve the quality of learning and of practice in applied learning. Bloom’s (1956) Taxonomy and the work of Paul and Elder (2001, 2002) on critical thinking can provide guidance in the design and use of the model. The DEAL Model can be used in such a way as to support critical thinking in a developmentally appropriate way that allows students to move through levels of reasoning from basic identification and explanation to synthesis and evaluation of learning. Further, it can be used to cultivate critical thinking capacities as well as to assess them. Although the model was originally designed for use at the level of the individual student or faculty member as learner, investigators in this study apply it at the program level. Doing so both requires and advances understanding of, and means of gauging, how best practices in critical reflection are and can be attempted and achieved in various program models.

The service-learning literature demonstrates a wide range of structures in service-learning programs or courses which result in reflection design that varies in format, scope, and organization (Brown, 2011; Jones & Steinberg, 2011). Whitney and Clayton (2011) compare multiple instances of ISL which vary in program structure, technology, language, and culture, and, in looking at different approaches to reflection, identify key variables in reflection design. Variables include who participates in, provides feedback to, and facilitates reflection; when, where and how often reflection takes place; and in what form is reflection captured and/or shared. When put into the context of best practices, these variables can be adapted into a tool that can assist with examining a program’s design of reflection activities. Programs that aim to provide educationally meaningful experiences must pay attention to reflection design and work to deepen and broaden the learning of all involved. Using the tool developed from the variables identified by Whitney and Clayton (2011), researchers examined the reflection design of the IST program over time. This process generated new learning about the particular program, while also demonstrating the usefulness of the tool in examining reflection design in ISL programs.

## CONTEXT: INTERNATIONAL SERVICE TEAMS

The investigators in this study sought to reflect critically on questions of reflection design and program evolution using the IST program as context. In the mid-1980s, small teams of Kansas State faculty were brought together by the shared purpose of developing a program that would engage students in communities—locally, across the state, and globally. From these teams came the idea to develop an ISL program. For the past three decades, IST has been a prominent part of service-learning efforts at Kansas State University. IST sends interdisciplinary teams of students to developing communities internationally for service-learning and community engagement work. Kansas State University defines service-learning in accordance with the Corporation

for National and Community Service as “a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities” (National Service-Learning Clearinghouse, 2010). Over 300 students have served in 18 countries on 5 continents, engaging in more than 90,000 hours of service in international communities. Both the IST program and the interdisciplinary teams are student-led, meaning that students guide the program, serve as resources to one another throughout, and no faculty or staff member is present on site during the international service experience. The program operates on an annual cycle during which IST student program coordinators, in consultation with faculty and staff members, select and prepare students for a 10-week summer service-learning immersion experience. This year-long program takes students through both the academic study and practice of service-learning and civic leadership in an international context, beginning in the fall semester during which student teams are selected and oriented to the summer service-learning experience. In the spring semester, students enroll in a 16-week course. The course content focuses on developing intercultural understanding and providing students with a foundation for civic engagement and community service work. Overall course goals include personal development (learning about one’s assumptions, skills, interests and abilities), civic engagement (exploring service project objectives and expectations, relationship to community systems), and academic learning (ethics of service and community development, cross-cultural communication, group dynamics, and leadership). Assignments call on students to reflect through written, oral, and artistic processes on their notions of service and community engagement. Throughout the spring semester, reflection materials are submitted which demonstrate the critical thinking processes that can enhance an ISL experience.

Upon successful completion of the spring semester, interdisciplinary teams of students travel to their respective communities to complete their 8-10 weeks of service. Teams live in homes or other local lodging and work daily with local community members to make progress on the community-identified need. The range of projects is broad and has included work on youth development, health initiatives, and environmental programs.

Reflection in the IST program has evolved in its twenty-three-year history, ranging from a post-service survey only, to facilitated reflection throughout and resulting in public presentations on campus following the service-learning experience. The design element of reflection, understood as the “primary mechanism that generates meaningful and powerful learning” (Whitney & Clayton, 2011, p. 148), as it has changed over time, is the subject of this study.

## METHOD

To improve understanding of and implementation of critical reflection in this ISL program, researchers in this study use the DEAL Model to reflect on three instances of reflection design within this program’s history. Based on the literature on reflection and the program data examined, researchers distill principles of promising practice into a tool, the Research Design Continua (RDC), to be used in examining the design of reflection in service-learning or other applied learning programs.

ISL shares elements of domestic service-learning, but in terms of designing and implementing critical reflection, there are variables, and interactions between variables, that need to be considered. Comparing multiple instances of ISL, Whitney and Clayton (2011) explicated key variables related to reflective practice including format, language, technology, and culture, among others. They suggest that “addressing challenges such as these necessitates that reflection processes and products be creatively managed in program design so that both rigor and flexibility become institutionalized, mutually reinforcing ways of doing reflection” (Whitney & Clayton, 2011, p. 168). Considering the nature of an ISL program, which is inherently unpredictable, researchers found attention to these variables to be critical to review of the program’s reflection strategies.

The RDC is designed to help locate the design of any given instance of reflection in terms of its characteristics and in consideration of these variables. Presented as a series of continua, the RDC isolates variables in a program’s reflection design. Each continuum is framed by a question (presenting a variable) with a series of potential response options (reflection practices) set out along a continuum. The continuum moves from narrow in scope on the left to broad on the right. Movement from left to right suggests value placed on achieving the most educationally meaningful experience (depth) for everyone involved (breadth).

Reflective practices are shaped by a combination of institutional, site, partner, and program level issues. Because of that, change along a given continuum is not necessarily linear, inevitable, or possible. Whitney and Clayton (2011) call on ISL facilitators, however, to consider the design variables that impact the ISL experience and reflective learning for students. Using the RDC, practitioners may consider changes that enhance a program’s reflection design in light of additional possibilities, reaching other points along the continua.

The RDC was designed in response to a need to assess the researchers’ program and examine how program evolution impacted reflective strategies. The DEAL Model was used as the framework for this study because it allowed researchers to think critically about and categorize how program variables changed over time. By first describing reflection design at different points in the IST program and then examining the design elements using variables identified in the literature, researchers were able to articulate learning that will inform reflection design

in the future of the program. In the process, researchers fashioned reflection design variables into a tool—the RDC—for broader application in service-learning programs. The RDC provides practitioners a mechanism to examine program design through the design choices in the reflection strategies used.

Having drafted a tool to be employed in the Examination stage of the DEAL Model at the program level, researchers then piloted its use by applying it to three historical cases of reflection design in the IST program. Data include archived program documents and participant reflections captured in written reports during and after service-learning experiences over the program's twenty-three year history, specifically from three program years: 1990, 2000, and 2010. These program years were drawn from each of the three decades of the program's existence

and serve to demonstrate programmatic changes related to reflective practices. Through a process of document review and content analysis, researchers individually rated each of the instances on the RDC, then reached consensus. In the process, the tool was refined.

This study utilizes the DEAL Model of Critical Reflection to reflect on a program's design to determine how reflection has been structured over the program's history and the extent to which varying iterations of reflective practices meet what scholarship supports as current best practices. Developing and piloting a tool based on those practices provides not only important information regarding this particular program's design of reflective practices but also informs refinement of the tool for use by other researchers and practitioners applying DEAL at the program level.

### APPLYING THE DEAL MODEL

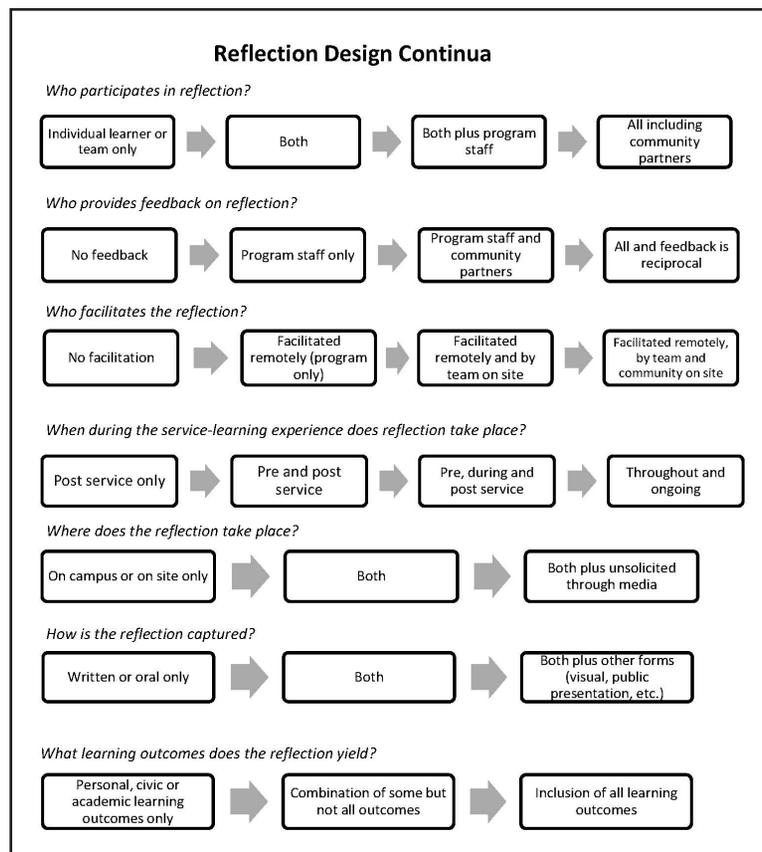
In the DEAL Model, the first step is *Description*, to explain an experience objectively: what is happening, where did the event take place, who was involved, and so forth (Ash & Clayton, 2009a). Applying DEAL to the program level requires a description of each of the three program years or cases examined in this study.

#### DESCRIPTION: THREE CASES

In 1990, two international service teams, comprised of seven students, traveled to the Dominican Republic and Costa Rica for their service-learning programs. Two students conducted a six-week project in the Dominican Republic, exploring the health, life histories, and productive role of the elderly in the Dominican Republic. Following an assessment, students identified strategies to provide appropriate opportunities for older persons to continue contributing to the community and economic development of those regions. This was the initial phase of a long-term project to formalize a comprehensive model involving senior citizens in Latin America and the Caribbean undertaken by the Fundación para el Desarrollo Comunitario, the International Research and Training Institute for the Advancement of Women, and the American Association for International Aging, among other organizations. In Costa Rica, a team of five Kansas State students partnered with students from the University of Costa Rica to address public health, housing, and educational needs within a small town. Specifically, the team completed a design for the Housing Project Poro, created a mural, taught English, and worked on a playground.

In 2000, IST sent a total of 24 students on seven teams to developing communities in Bosnia, Jordan, Nepal, Belize, Mexico, and Costa Rica. In Bosnia, a team of four students served the Bjelje Children's Home in Sarajevo. Aside from daily daycare activities, the team developed arts and creativity programs to help children express their feelings and emotions through art therapy. Another team of four

Figure 1. Reflection Design Continua



students worked with the Jordanian Hashemite Fund for Human Development, working in two centers teaching English to children as a part of a summer program in Jordan. In Nepal, two students worked in the Mechi English School in Phidim, conducting teacher and staff education workshops and working with the school children. In Belize, the team worked at two service sites: two students worked with Belize Rural South assisting with tourism ideas and developing a summer education program on the island; and three students worked with the Greenleaf Project to develop bird sanctuaries on two neighboring islands, count crocodiles, and assist with plant and tree identification. Two teams served in Mexico. In Tampico, Mexico, two students worked with a summer day camp and a local orphanage that functioned as a local learning center, offering lessons on math, science, dance and English. In Izamal, Mexico, three students worked at La Fundacion Cultural Yucatan in their summer camp for local children. The final 2000 service team served in Costa Rica: two students worked with the Arenol Volcano National Park at the Alberque La Catarata Ecotourist Lodge, classifying butterflies, plants, and flowers; and two students worked with children and the administrative offices of a local private school, teaching English and arts and helping with extracurricular activities.

In 2010, three international service teams, consisting of 12 students, participated in service-learning programs in Kenya, Mexico, and Brazil. A team of five students traveled to Nyeri, Kenya to work with a local children and youth empowerment center, working with youth in school and club-related activities, enterprise development, and vocational skills training. A team of four traveled to La Preciosita near Puebla, Mexico and worked with families to learn English and with children to develop and perform theater. In Jacunda, Brazil, a team of three served at a local orphanage, assisting with daily daycare activities, developing arts and creativity programs, and helping with extracurricular activities.

#### **EXAMINATION: USING REFLECTION DESIGN CONTINUA**

In the second step of the DEAL Model, Examination, experiences are linked to desired learning outcomes, moving from summarizing what happened to making meaning of the experience. To make meaning of each of the program years, researchers plotted data on the Reflection Design Continua (RDC). Data were gathered by reviewing program documents, including student reflection products, to examine the structure, format, and scope of reflective practices in each of three program years, representing early, mid, and recent practices. Utilizing elements of the RDC, the program's reflective practices in each of the selected program years were documented and categorized. The elements documented included the year of the reflection and the format of the reflective practice. When examining format, distinctions were made between reflections that were unidirectional (student to home program with no exchange of feedback) and those that were multidirectional

(students, home program, and community partners exchange feedback). Next researchers used the RDC to categorize reflection as performed individually or collaboratively and the format of the reflection as written, oral, artistic (photo documentation), or digital (through blogs or video creation). Further, researchers established who was involved in the reflective practice; students, faculty, partner institutions (community and higher education) and program staff were identified for their roles as respondents and/or as facilitators. Each reflective practice was analyzed for the outcomes it supported (student learning outcomes from academic and co-curricular programs) and products yielded from that work. Products include photo scrapbooks, final program reports, DVD documentaries among others. Finally, the reflective practices were sorted by the final evaluation project. All data were then plotted on the RDC to make meaning of reflective practices and strategies in each of the three program years and over the history of the program to date.

#### **RDC APPLICATION: 1990**

In 1990, two international service teams traveled to the Dominican Republic and Costa Rica for their service-learning programs. Teams completed one collaborative reflection in a written, unidirectional format. Reflection engaged faculty, students, and the institutions in a post-service survey distributed by the host campus and gathered quantitative research data through forced choice (yes/no) questions. The data gathered resulted in a program summary report that evaluated the program, service project, and host partners.

#### **RDC APPLICATION: 2000**

In 2000, seven international service teams participated in reflection. Students participated in individual and team reflections in written, oral, and artistic (photo documentation) formats. The program staff, students, and partner institutions were involved in the reflective practices. Reflection took place pre-service (students were still at their home campus), twice during their service-learning experience (students completed reflection packets on site), and once post-service (when students were back at their home campus). The reflection was multidirectional pre- and post-service, but the reflection that occurred during service was unidirectional in that no feedback was provided. The intended outcomes of reflective practice were program evaluation and personal development, and the products yielded included journal entries, team reflections, program reports (written and oral), and photos of the students' experiences. The reflections were conducted through a one-credit-hour, graded reflection course in addition to exit interviews and presentations.

### RDC APPLICATION: 2010

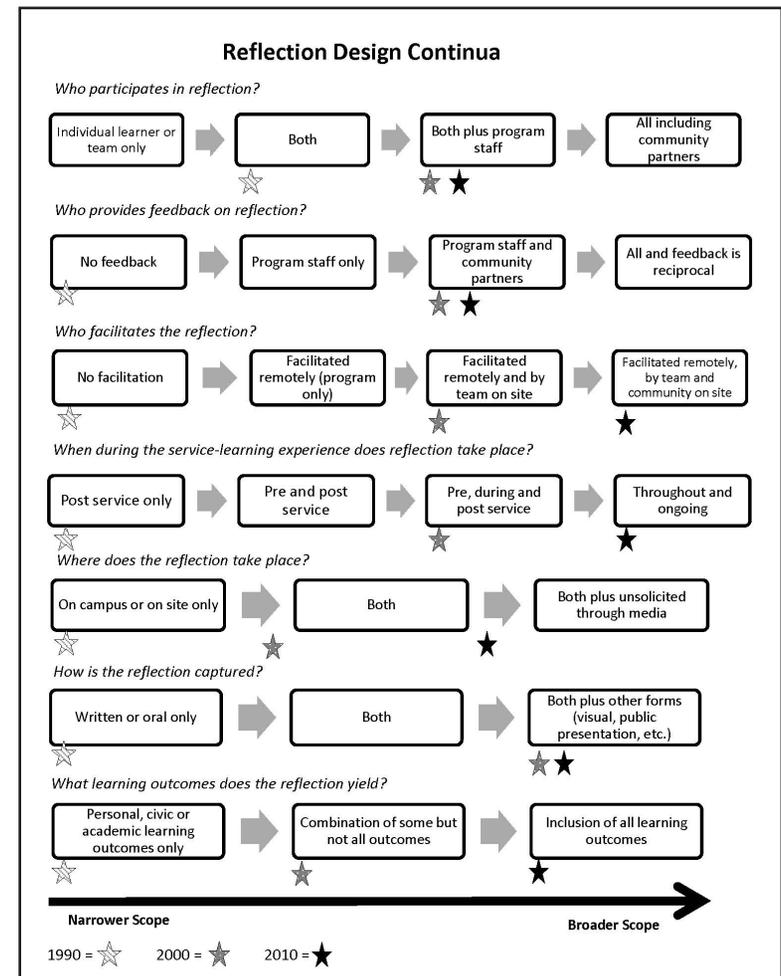
In 2010, three teams participated in international service. Reflection took place pre-service through multiple on campus mechanisms (oral reflections in individual meetings with program facilitators, weekly team meetings, and in-class discussions; written reflections through journals and essays; and the development and sharing of a pre-departure travel guide); during service (three times while students were on site); and post-service back on campus through meetings, presentations and a written report. The reflective practice pre-, during, and post-service was multidirectional. Reflection was facilitated by students, program staff, and community partners and was both individual and collaborative in nature. The format of the reflection was written, oral, and through digital media and included program staff, students and contacts within partner institutions. The reflective practice assessed student learning including personal development, team dynamics, and community impact, and it provided data for program evaluation. Students produced a DVD project, site summaries, blogs, class and public presentations, and photographs. Reflection was conducted as part of a three-credit-hour course in international community service.

### ANALYSIS: THREE CASES

Locating each of three years' reflective practices on the RDC demonstrates the structure, format, and scope of the program's reflective practices as they evolved (see Figure 2). Comparing each of the three cases, researchers observed specific trends in the evolution of the reflective practices implemented by the program from 1990 to 2010. First consideration was of the evolution of structure, format, and scope of the reflective practices. Figure 2 shows shifts in the direction, mechanism, frequency, outcome, and evaluation of participant reflection. Additionally, researchers observed an evolution in the type of reflective practice. The program model shifted from an evaluation-based reflection, demonstrated by a forced-choice post-service survey with prompts such as "Was the physical and medical preparation adequate?," to a critical thinking-based reflection better aligned with best practices of critical reflection, such as the reflection prompt in 2010, "What would you tell a team preparing to head to your site for the first time? What do you know now that you wish you had known three weeks ago?," which allows students to demonstrate critical thinking standards. This demonstrated a significant if gradual change of the program, moving from its initial focus on engaging students in service as the primary goal to a broader inclusion of academic enhancement reflective of a more fully developed service-learning model.

This evolution of reflective practices followed an organizational change; the IST program moved from the community service office, which served a co-curricular function, to an academic unit delivering both an academic minor and co-curricular programming focused on

Figure 2. Reflection Design Continua Applied to Three Cases



student learning. Further discussion of the observed changes that took place over the three program years (1990, 2000, and 2010) provides insight into the program development and growth.

In 1990, reflection prompts addressed program evaluation and learning goals. The data analysis shows that many more of the reflection elements (questions posed and the format through which the reflection took place) were focused on evaluation of the program rather than assessment of a specific set of learning outcomes, with little connection

to academic content. The evaluation was primarily focused on the technical aspects of implementing an ISL partnership, not geared for assessment of student learning or development. Although some questions did elicit information about academic enhancement and personal growth, more elicited information on program success. An observation researchers made was that little focus was placed on reciprocity in learning or on the students' role in the project. Additionally, only students completed the evaluation, and only at the end of the project; there was no role for community partners in evaluating project success.

By 2000, distinct changes in the format and scope of the reflection activities can be seen. One such shift is the role of collective and individual learning, which are both addressed through separate reflection processes. The data indicate that some time prior to 2000 the understanding of team dynamics was introduced into the preparation course as an intentional academic component to the program. Civic engagement also began to shift from a distinct experiential goal toward a subject of academic investigation within the program course work. This is evidenced by the shift in the number of reflective prompts from 1990, 2000 and 2010 sorted as solely civic engagement and those sorted also as academic enhancement. As service-learning developed as a practice, and its scholarship grew and gained acceptance in the academic arena, civic engagement as a subject of academic study began to emerge (Furco & Root, 2010; Giles & Eyler, 1998; Tonkin, 2011).

When the IST program began in the nineties, community development was the primary academic content for the preparation course. By 2000, the curriculum included team dynamics, group processes, and conflict resolution, reflecting a focus on leadership development. By 2010, the course was fully integrated into the Leadership Studies curriculum, and civic engagement, previously considered a behavior or experiential goal, had gained acceptance also as a critical academic learning outcome.

Examining three cases using the RDC, researchers found that reflection in IST evolved from 1990 to 2010 in design, delivery, anticipated outcomes, and purpose. Program documents indicate that historically the program focused on civic engagement and personal development, which were early goals of community service programs in higher education (National Service-Learning Clearinghouse, 2010; Plante, Lackey & Hwang, 2009). Only in the past five years, when the program was moved to be housed in the School of Leadership Studies (an academic unit with strong emphasis on student development), has the program's focus on academic enhancement grown through the implementation of critical reflection. Data from this study, collected over twenty plus years, suggest that the emergence and development of the fields of leadership studies and service-learning in the academy over the past three decades have led personal development and civic engagement to move beyond distinct program goals to inclusion in the academic content of ISL, and therefore may likely be represented also as academic learning outcomes in ISL reflection.

Over the years, the program began also to separate in some measure program evaluation from student learning assessment, providing clarity that strengthened reflective practices. Reflective practices continue to be employed in service to both outcomes, but were more intentionally designed for the distinct purposes. In 1990, the "reflection" instrument was a forced-choice survey administered following the service experience that asked students to evaluate the program, but did not address their learning. Given the definition of critical reflection used in this study, data indicate that students in 1990 did not participate in reflection, but rather only program evaluation. In 2010, following their service experiences, students completed written and oral reflections, and created a DVD presentation that demonstrated their learning. In addition, students provided program feedback and evaluation through a series of individual and team meetings with program facilitators and also through individual and team written evaluations. Separating the evaluation and reflection activities resulted in more and richer data for use by program administrators to both assess student learning and improve program practice.

In many ways, the work shows that the IST program has grown up or kept pace with service-learning as a field of practice and study. Findings from the three program years of this 20-plus-year ISL program reflect and illustrate, to a large extent, the development of service-learning, including its focus on critical reflection, and the progression from community service to an academic service-learning model.

## ARTICULATED LEARNING

The final step in the DEAL Model of Critical Reflection is *Articulating Learning*. For an individual learner, critical reflection in this step is often guided by the four prompts: what did I learn, how did I learn it, why is it important, and what will I do because of it (Ash & Clayton, 2009a, 2009b). The same questions have value when using the model at the program level. Here, we share examples of what was learned and changes that may result from that learning.

One learning outcome for the researchers is a deeper understanding and appreciation of the time and energy required to construct meaningful reflective practices. Although not a novel thought, researchers were confronted with the extent and degree to which time and energy spent in design determines deep learning from critical reflection. If a program wishes to implement a critical reflection strategy, particularly program-wide and over time, significant attention must be paid to the design of that strategy. Because of the time and energy required on the part of program administrators, including student coordinators, programs may need to consider the size and scope of their activity. Running counter to a typical growth model, programs may need to limit activity to fewer sites and number of students served to preserve or improve the quality of reflection. This may prove problematic for

programs being encouraged to grow the number of sites and increase the numbers of students served, creating competing priorities that then need to be managed.

An action resulting from this learning outcome for the IST is a commitment to limit sites to the current number, given current resources. Although IST continues to establish new partnerships and explore future sites, those sites will only be added if and when existing sites are discontinued or in the event of additional resources.

Another learning outcome for researchers is recognition that IST has yet to appropriately engage host communities in reflection. In examining who participates in reflection, at all stages of the IST experience and throughout the history of the program, the absence of meaningful community voice in reflection was striking. Identifying community partners with the interest, orientation, and resources to contribute to the student learning has been a compelling focus for program administrators; yet, no serious, sustained effort has been made to include those partners in the critical reflection process.

For IST, this learning informs not only the design of reflection practices but also the site selection process. In establishing sites, IST will work with community partners to determine how best to include their voice in the critical reflection process of the students. Considering the variables such as format, language, technology, and culture, program coordinators will design practices to appropriately and sufficiently give voice to community partners' experiences and perspectives.

An overarching learning outcome researchers achieved through this process of applying the DEAL Model at the program level is that student reflections have multiple uses in advancing and deepening learning in the IST program. Not only do students' reflections demonstrate their own learning, providing them a mechanism for making meaning of their experience, but those reflections also inform the program and how critical reflection is designed and conducted. Program administrators must be intentional in reviewing reflections for the purpose of program evaluation, specifically reflection design, in addition to examining them for evidence of what students learned.

As a result of this learning outcome, IST is reviewing how reflection artifacts are collected, shared, archived, and utilized. Further analysis of reflection data, existing and future, is planned to inform site selection, student recruitment, and academic preparation for service-learning as well as design and implementation of reflective practices within the IST program.

## DISCUSSION

Through the process of applying the DEAL Model of Critical Reflection at the program level, researchers created the RDC, a tool that integrated reflection design elements with principles of good practice to help practitioners better understand and implement design of reflective practices. The process of developing and applying the tool clarified points along continua that reflect variation in reflection design.

The tool began as a somewhat formulaic, more-is-better, simple 1-2-3 progression along a set of continua. Through its application, it became clear that points along the continua, if more fully unpacked, would add opportunity for richer exploration and understanding of design opportunities and limitations. Although movement to the right end of the continua carries the value of breadth, applying the RDC revealed that deep learning is possible at any point, and the potential to broaden the reflection experience may be determined by factors other than design. Recognizing that reflective practices reveal a combination of institutional-, site-, partner-, and program-level issues and constraints, it became clear that change along the continuum is not necessarily linear, inevitable, or possible. Applying the RDC also raised questions about the sources of variation in a program's design and about the extent to which those variations matter to the quality of learning. Although the researchers did not assess quality of student learning as part of this study, such a line of inquiry is worthy of future research.

In developing the RDC, researchers did not distinguish elements of service-learning generally, from elements of ISL more particularly. Whitney and Clayton (2011) consider some implications of the international context *per se* for the design of reflection. Further review of IST cases through the lens of these ISL variables will allow researchers to (a) better understand and improve the IST program and (b) refine the RDC tool for more useful ISL program review, pushing beyond Whitney and Clayton's (2011) discussion to operationalize ISL design in light of implications of the international context. For example, one variable Whitney and Clayton identify is language, and in the international context, how language and cultural norms of communication "may create confusion for students during daily experiences" (p. 165). For the IST, this confusion resulted in the loss of a service site in Botswana in 2009. Community members and students differed in their expectations of service, and of behavior within the community, but were not able to communicate their differences. Only after two years of service teams, and the intervention of an unaffiliated American volunteer, did IST understand the problem. Had the IST program utilized the RDC with their site in Botswana, they may well have discovered a gap in community voice, and with intervention, may have been able to preserve the partnership. Inclusion of the host community in ongoing reflection can alert program facilitators about potential challenges and possibly address misunderstandings in the moment.

ISL is a significant investment for faculty, communities, institutions, and for students, with significant potential for return on that investment—personally, civically, nationally, globally. The risks and rewards of ISL warrant high quality and ongoing critical reflection. Critical reflection in ISL generates deep learning, and also safeguards against the potential minefield of cultural miscommunication. Success of applied learning programs generally depends upon the quality of reflection in which participants are engaged. Reflecting on a program's own practice of reflection design is as valuable as students reflecting

on their experience. To do so effectively, practitioners must take the opportunity to think critically about their design of reflective practices—its structure, format, and scope. Following a model of critical reflection such as DEAL, one must describe the experience; examine it in relation to learning goals; and articulate learning from the reflection. Applying the RDC to other applied learning programs may require enhancements, and we welcome further refinement of the tool for such purposes. For example, the current RDC, focused as it is on service-learning reflection design in an ISL program, presumes participation of students as team members and community partners. Refined for use with internships, the tool might instead include individual learners and organizational staff. “Service” would be broadened to “experience” and, in cases of undergraduate research, for example, might require clearer boundaries or definition. Questions and options on the RDC continua would need to be reviewed for relevance given assumptions about timeline for the applied learning experience. Utilizing the RDC tool, refined and piloted for use beyond service-learning programs, may offer opportunities for future research on reflection design in other forms of applied learning, such as internships or undergraduate research programs.

The DEAL Model of Critical Reflection (Ash & Clayton, 2009a), designed to help improve the quality of learning and of practice in applied learning, can be applied at the program level to improve understanding of and implementation of critical reflection in ISL programs. Building on the comparison of multiple instances of ISL in Whitney and Clayton (2011), and particularly the important variables of program design related to reflection indicated there, researchers integrated principles of promising practice into a user-friendly tool, the RDC, that can be applied to the design of reflection. Using the RDC to examine reflective practices from three program years in each decade of Kansas State University’s twenty-plus-year IST program, researchers gained insight into the program’s design of reflective practices and how reflection grew and developed as the IST program focus shifted from basic program evaluation to assessment of learning goals. Piloting the tool in this way also provided insights on how the tool might be improved to target reflection design of ISL programs in particular, with a focus on the implications of the international context.

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## Applied Learning at the Graduate Level—Professional Science Master’s Programs Lead the Way

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*To remain competitive in an increasingly interdisciplinary world, graduate education must produce professionals who can understand both their scientific disciplines and the business environment in which they work. With the addition of applied learning components outside of the traditional scientific laboratory and training in business skills, Professional Science Master’s programs (PSMs) help higher education adapt to this changing environment. The current study illustrates some models of PSMs and contains information on how institutions interested in using PSMs as a way to enhance applied learning at the graduate level can get started.*

*“Graduate education in the natural sciences has traditionally emphasized doctoral training for academic or research careers. This training, however, is not meeting the demand for professionals in business, industry, and the public sector, where individuals with a combination of scientific, technical, and managerial skills will be required.”*  
(BHEF, 2011, p.1)

The world of science is increasingly interdisciplinary, creating strong demand for professionals who can translate scientific and technical knowledge into policy-making arenas and entrepreneurial ventures. The skills needed to succeed in these endeavors, however, are often lacking. Students typically focus their education and research within narrowly-defined scientific disciplines, particularly at the graduate level. Faculty research drives education and prepares future cohorts of investigators. However, universities train more than just academicians, and to remain competitive and viewed as contributors to a state’s economy, faculty designing curricula have to consider the needs of regional employers.