Learning Lessons at Engineers Without Borders USA

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Capstone Seminar: Fall 2015

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Executive Summary

Engineers Without Borders USA (EWB-USA) is an international development nonprofit that addresses basic human needs in the developing world by partnering communities with chapters of volunteer engineers to deliver sustainable engineering projects. Two years ago, EWB-USA implemented a comprehensive planning and impact assessment program, called the Planning, Monitoring, Evaluation and Learning (PMEL) program, designed to allow them to show the long-term impact of their projects for their community partners. Integrated within this impact assessment program is a formal learning strategy that aims to capture data and experience from all phases of projects that can both support impact assessment and improve how EWB-USA implements projects.

The PMEL program has shown much promise both at transferring experience gained from one project to the next and in supporting evaluation and assessment of the overall impact of their projects. But it also involves a large administrative and reporting burden, the resulting products have not been seen to be as usable and accessible to project teams as desirable, and it is difficult to determine if learning is actually being put back into EWB-USA's processes. In order to address these issues, this project had as concurrent aims to identify the strengths of EWB-USA's approach to learning and make recommendations on ways to improve its organizational learning.

The study found that EWB-USA embodies many of the characteristics of a successful learning organization as defined in the literature. Interviews made clear that leadership is engaged, staff is aware of the importance of learning and are committed to it, mistakes are generally viewed as learning opportunities, and everyone is willing to take risks in order to introduce improvements in how EWB-USA does things. With the introduction of PMEL and the creation of a permanent Impact Analysis team, EWB-USA not only demonstrated its commitment to learning but also took important steps towards improving its ability to learn, as an organization, from its experience. But still, EWB-USA cannot yet be described as a learning organization. Despite having the right foundations of leadership and mindset, EWB-USA still
struggles in many ways to turn its experience into improvement in its activities. There is potential for a lot of lessons to fall through the cracks and they are not yet using available data and knowledge to full effect.

The principal reason for this is that EWB-USA has not yet introduced all of the structures, processes and tools that would allow them to systematically close the loop between what they are doing, the data they are capturing from that activity, using that data to define and implement improved practices, and sharing the results. EWB-USA has, through its project reporting process, an enviable method for collecting data and, as a result, an enormous amount of data at its disposal. But reporting is focused on only certain types of learning that are important to EWB-USA, is reviewed by only a few individuals, and is stored in such a way as to make it hard to use it to support comprehensive analysis and is essentially inaccessible to chapters. The HQ's flat organizational structure has, somewhat surprisingly for so open an atmosphere, major stovepipes between teams that limit the amount of internal information sharing that takes place. And, although there are a number of powerful organizational learning mechanisms in place, these are ad hoc and limited to individual teams. Finally, mechanisms for formal sharing of information from HQ to chapters as well as among chapters are limited.

Recommendations therefore focus on enhancing EWB-USA's ability to learn the lessons most relevant to its mission and vision: lessons related to working with communities, and helping its chapters do this better. The recommendations presented in this paper are designed to do this by improving the quality of reporting done by chapters, especially as it relates to community lessons, doing more with the data contained in these reports, including finding new ways to integrate the learning from reports with other information coming into HQ, and developing more and better ways to share the resulting learning across the organization.
Two years ago, Engineers Without Borders USA (EWB-USA) implemented a comprehensive planning and impact assessment program, called the Planning, Monitoring, Evaluation and Learning (PMEL) program, designed to allow them to show the long-term impact of their projects for their community partners. Integrated within this impact assessment program is a formal learning strategy that aims to capture data and experience from all phases of projects that can both support impact assessment and improve how EWB-USA implements projects.

The PMEL program has shown much promise both at transferring experience gained from one project to the next and in supporting evaluation and assessment of the overall impact of their projects. As a new, organically developed organizational learning program, PMEL serves as a model for how to implement such programs in nonprofit organizations. At the same time, the Impact Analysis Director worries that it involves a large administrative and reporting burden, that the resulting products are not as usable and accessible to project teams as desirable, and that it is difficult to determine if learning is actually being put back into their processes. In short, EWB-USA has made a commitment to collecting and sharing lessons and experience but does not know to what extent that contributes to its organizational learning.

Given the factors above, EWB-USA's PMEL program provides fertile ground for examining what distinguishes a lessons learned process that actually supports organizational learning from the many that, despite commitment of effort and resources, do not. This project therefore has as concurrent aims, first, to identify the strengths of EWB-USA's approach to learning and, second, to make recommendations to EWB-USA on ways to improve its organizational learning.

**Overview of the Organization**

EWB-USA is a nonprofit humanitarian organization established to support community-driven development programs worldwide through sustainable engineering projects, while providing transformative experiences that enrich global perspectives and create responsible
leaders (EWB-USA, 2015). Its mission is to build a better world through engineering projects that empower communities to meet their basic human needs and equip leaders to solve the world’s most pressing challenges and its vision is a world in which every community has the capacity to sustainably meet their basic human needs (EWB-USA, 2014). It is a 501(c)3 membership-based organization with an annual budget of $4.7 million (EWB-USA, 2015) that is headquartered at the Posner Center for International Development in Denver, Colorado. Twenty-eight staff run the organization and coordinate the activities of its members. It has 276 member chapters with 15,900 members. 72% of chapters are student chapters, located at universities across the United States, while some are professional chapters. Most members, though not all, are engineers: engineering students at the student chapters and licensed, practicing engineers at the professional ones. Student chapters also have faculty advisors and professional mentors who guide the students through the design, reporting, and construction phases of conducting projects.

EWB-USA’s approach is for each chapter to partner with one or more communities in the developing world under the umbrella of a development program and within each program to deliver a series of engineering projects that provide technical solutions to problems the community faces in meeting its basic human needs. Chapters are responsible for all planning and logistics related to their projects, including funding their own travel and implementation costs, some of which are offset by grants from EWB-USA. Two important elements of EWB-USA's approach is that projects are meant to be community driven and sustainable, meaning that communities define their own needs and have vested ownership in the solutions, including participating financially and with labor in the delivery of projects. Sustainability is also enhanced through education delivered by chapters on the use and maintenance of the implemented technical solutions. A concurrent aim of EWB-USA is that members who participate in projects gain a global perspective that will enhance their ability to tackle the world's problems.

The principal role of EWB-USA HQ is to help chapters, members, and project teams deliver the community-driven, sustainable projects and programs that are in line with its mission and vision. HQ is structured in teams. Some of these teams are typical for any nonprofit, like
Public & Donor Relations (which includes fundraising and corporate communications), Finance, and IT. The two teams most relevant to this study are Volunteer Engagement (VE) and International Community Programs (ICP). VE helps chapters with management functions like chapter organization and structure, officer roles and responsibilities, and fundraising. ICP oversees all international project-related work, providing advice and approval to chapters on technical and community aspects of carrying out their projects.1

The principal mechanism used by ICP to monitor and provide advice on projects is the project reporting process. Projects are done in stages (Assessment, Design, Implementation, and Monitoring & Evaluation) with each stage except Design accompanied by one or more trips to the community. Before and after each trip, chapters must submit a report documenting the details of their planning and accomplishments. These reports are known as 500-series reports.2 ICP's four Project Engineers (PE) and the ICP Coordinator carefully review these reports to ensure that chapters are proposing, and actually carrying out, safe, achievable, and sustainable technical solutions that meet communities' needs. The PEs, each of whom is assigned one quarter of all projects, review for technical and community aspects of the project, and the ICP Coordinator reviews for logistics, health and safety aspects. ICP has the authority to approve or delay chapters from proceeding with their project based on the content of the reports.

With the implementation of PMEL, a new, third team was created that plays a critical role in linking the work of chapters to EWB-USA’s overall learning strategy: Impact Analysis (IA). Currently a team of one, IA's principal task is to ensure that the impact of all of EWB-USA’s work is effectively measured and continually improved. With respect to programs and projects, IA performs the assessment of the long-term impact of EWB-USA's programs in communities, employing deliberate approaches to capture and analyze the learning taking place.

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1 In 2014, EWB-USA initiated two new programs, Engineering Service Corps and Community Engineering Corps. Because of their newness, they were not included in this study.
2 So called because the report for each stage is labeled 5XX. For example the Post-Implementation Trip report is the 526. A summary of the project reporting process including a list of 500 and 900 series reports with a brief description of their purpose is at Appendix A.
as well as planning for the monitoring and impact assessments that will take place following implementation of a technical solution. Impact assessment planning involves establishing a logical framework for how actions will lead to impact and pre-identifying measurable monitoring indicators, selected from a menu of possible indicators based on project type. This approach is represented in practice by an additional line of reporting, called 900 series reports.

A final element of EWB-USA’s structure and approach to carrying out its programs and projects is a network of committees, made up of volunteers from the membership, that review and provide advice on various EWB-USA activities. Most important to this study are the Technical Advisory Committee, which reviews and approves—or disapproves—final design plans for projects; the Application Review Committee, which reviews and approves new programs and communities; the Standing Content Committees, which review best practice for specific types of technical projects (e.g. sanitation or bridges); and the Regional Steering Committees, which are the link between HQ and the chapters by geographic region.

**Literature Review**

Organizational learning and the closely related topic of lessons learned have garnered much attention over recent years. This is reflected in the large amount of literature available on these topics. The literature review was therefore focused on identifying current thinking on key success factors and standard pitfalls in organizational learning for comparison against EWB-USA’s learning strategy. The review encompassed a range of publications, including relevant academic articles, theoretical popular literature, and practical implementation guidance.

Two factors became apparent during the literature review. The first was that the majority of available scholarly articles, as well as popular literature, address organizational learning in for-profit business organizations. A search of *Nonprofit and Voluntary Sector Quarterly* for the terms *learning* and *lessons* revealed only one article addressing organizational learning in nonprofits and none dealing specifically with lessons learned processes. A search of the journal *The Learning Organization* found just one article (Prugsamatz, 2010) that deals specifically with
nonprofits and a search of the *Stanford Social Innovation Review* resulted in just one directly relevant to this study (Smith Milway & Saxton, 2011). As Andjelkovic and Boolaky (2015) acknowledge in their literature review, there is comparatively little literature dealing specifically with organizational learning in the nonprofit sector. However, the literature that exists is quite recent and, based on the works cited in Gill (2010), Prugsamatz (2010), Whatley (2013), Andjelkovic and Boolaky (2015), is based on the latest thinking from the private sector.

The second factor observed is that all of the literature, whether scholarly, popular, or practical handbook, presents successful organizational learning in terms of taxonomies. Whereas different authors use different terminologies in their taxonomies, though often based on or modifying terminology proposed by earlier authors, the taxonomies all address two dimensions of organizational learning. First, they address the levels at which learning takes place and how it moves up these levels. One often used taxonomy for levels of learning is: individual, group, organization (Crossan, Lane, & White, 1999). Second, they address the key factors for successful learning or, conversely, the major barriers to learning. Some of these taxonomies will be introduced in the discussion below and a table of taxonomies is presented at Appendix B.

Any discussion of organizational learning begins with *The Fifth Discipline*, Peter Senge's (2006) groundbreaking work on what learning organizations are and how they can be created. This work is not only cited by every other academic article consulted in the course of this literature review, it is in almost all cases the first discussed in their literature reviews and serves often as the starting point for further research. Senge's taxonomy is based on five disciplines of thinking and acting for members of organizations: personal mastery, mental models, team learning, building shared vision, and, last and most important, systems thinking. He believes that transformational leaders who understand how the system within which an organization functions (systems thinking) can develop these disciplines to create learning organizations and thereby attain high levels of achievement.

Two further studies on organizational learning have proved important to subsequent research, providing a basis for understanding how organizations learn. The first is Crossan et al.
(1999), who proposed that learning in organizations takes place at the aforementioned levels of individual, group, and organization. They further postulated that learning is an interactive process across these levels that can take the form of *intuiting*, where individuals develop new insights, *interpreting*, where individuals explain new ideas to the group, *integrating*, where understanding is achieved among the group, and *institutionalizing*, where shared understanding is implemented in organizational structures and processes. This "4I" model has been used as the basis in several of the follow on studies cited here. One of these, Schilling and Kluge (2008) examined barriers to organizational learning in what is essentially a massive literature review of a large number of other studies on such barriers, then categorized these barriers both along the procedural 4I lines and by classifying them according to the form the identified barriers can take: actional-personal, structural-organization, and societal-environmental. In so doing they created "a theoretical framework that integrates existing theory and evidence on barriers to [organizational learning]." (Schilling and Kluge, 2008, p. 338) and provide not only a useful list of a wide range of documented barriers to organizational learning but also a way to think about them in a more systematic way, further advancing Senge's focus on systems thinking.

One of the most useful articles for the purposes of this study was Lipshitz, Popper and Friedman (2002) which proposed not only a facets-based model for organizational learning, comprising the Structural, Cultural, Psychological, Policy, and Contextual facets and the subordinate elements that lead to productive learning in organizations, but also the concept of Organizational Learning Mechanisms (OLM). These are defined as "observable organizational subsystems in which organization members interact for the purpose of learning" (p. 82). OLMs provide a non-metaphorical basis for relating individual learning to organizational learning and thus are an observable manifestation of the connected learning pathways an organization needs in order to learn (Milton, 2010, p. 3).

Scholarly articles on organizational learning in nonprofits have built off these general application studies by examining if the theories postulated in literature on for-profits can be found to apply to nonprofits. Prugsamatz (2010) found, through a case study employing
qualitative techniques in five Thai-based development nonprofits, that the models for how
individual motivation, team dynamics, and organizational culture affect learning in organizations
based on private sector research also apply in the nonprofits she studied. While she used research
other than Crossan et al. (1999) as the basis for her models, her theoretical taxonomies were
effectively the same.

Whatley (2013) translates several major concepts in organizational learning from the for-
profit sector in developing a proposed leverage-learning model adapted to the international
development nonprofit context. He also identifies the three dynamics needed to create a strong
learning organization: strong and committed leaders; a favorable learning culture; and effective
learning mechanisms or structures. Andjelkovic and Boolaky (2015) subsequently examined
barriers to organizational learning in a single, large, international development nonprofit. This
study was based directly on the work of Schilling and Kluge (2008). They were able to
demonstrate empirically that theoretical barriers to organizational learning do impact a
nonprofit's being able to effectively learn. The implications are that Schilling and Kluge's
theoretical propositions can be validated in practice and that its basis in the for-profit sector can
be extended to nonprofits as well. Taken together, these three studies strongly imply that the
concepts for how organizations learn, as well as the barriers to such learning, described in the
literature on the for-profit sector apply just as much to the nonprofit sector. That is, the
organizational behavior factors that help or hinder organizational learning affect nonprofits in
much the same way as they do businesses.

The scholarly literature, as well as most of the popular literature, is based on very
academic and theoretical concepts from the fields of organizational behavior: structure,
hierarchy, internal politics and power, and leadership. Such a theoretical underpinning is clearly
valuable from a research perspective for understanding how organizations learn and what the
major impediments to organizational learning are. However, such articles have limited practical
applicability for helping an organization like EWB-USA design and implement a lessons learned
process or for identifying specific ways to improve that process. Bushouse and Sowa (2012)
examined the practical usefulness of articles in *Nonprofit and Volunteer Sector Quarterly*, as opposed to merely expanding knowledge of the field, and found that only 23% of the 408 articles considered "clearly made their findings relevant for policy, practice, and/or management" (p. 503). Of the scholarly articles cited here, only Andjelkovic and Boolaky (2015) and Smith Milway and Saxton (2011) meet the coding criteria for practical applicability established by Bushouse and Sowa. Lipshitz, et al. (2002, p. 92) acknowledged this explicitly: "the concept [of organizational learning] is used in a metaphorical and/or analogous sense, that it lacks theoretical integration, that research is being done in a noncumulative way, and that the literature does not provide 'useful' knowledge for practitioners." The scholarly literature may explain what constitutes being good or bad at learning, and maybe even why, but does not offer much in the way of telling an organization what they should do about it.

Two exceptions to the theoretical nature of the scholarly literature are Wellman (2007) and Smith Milway and Saxton (2011), who give easily understandable advice based on their personal experiences of building learning organizations. Wellman proposes an approachable taxonomy of different and, in effective learning organizations at least, complementary methods for capturing organizational knowledge: culture, old pros, archives, and processes. At their most basic, these four methods are practical translations of the academic terminology used in the taxonomies of the studies described above. Smith Milway and Saxton look at the key elements of organizational learning—supportive leaders, a culture of continuous improvements, an intuitive knowledge process, and a defined learning structure—and examine barriers to sharing knowledge, ultimately deriving a practical method for creating a knowledge-sharing process.

Supplementing the scholarly works are the handbooks—Gill (2010), Milton (2010), and NATO JALLC (2011)—which are designed to lead an organization through the process of setting up and running a lessons learned process. These handbooks describe practical approaches for implementing formal processes to capture what is learned through experience and ways to avoid the standard pitfalls. The handbooks’ strength is that they focus on implementing processes that in many ways are independent of the organizational structure, hierarchy or management
styles at play and thus provide a useful foundation for assessing the strengths and weaknesses of the lessons learned process implemented under EWB-USA's PMEL program. A key concept for all learning processes is Milton's notion that lessons arise from activity, take the form of recommendations based on experience from which others can learn, and are only learned when something changes in the way an organization operates.

In addition to describing lessons learned processes and how they can be implemented, these handbooks also contain taxonomies for thinking about lessons learned processes. The simplest to understand and easiest to represent graphically is the "Lessons Learned Temple" described in the NATO Lessons Learned Handbook (NATO JALLC, 2011), with its foundations of Mindset and Leadership and its pillars of processes, tools, and structures (Figure 1). Ridgway and Lipscombe (2011) provide a summary of the temple and the critical success factors needed to make any lessons learned process work. The temple and the underlying notions offer a useful framework for assessing the effectiveness of a lessons learned process, especially in identifying areas of strength and weakness, including for PMEL. The temple is in many way analogous to the three dynamics needed for strong learning organizations identified by Whatley (2013) and the key elements of organizational learning identified by Smith Milway and Saxton (2011).

![Figure 1. The Lessons Learned Temple](image)

**Purpose of the Project**

The purpose of the project is to identify the strengths and weaknesses of the lessons learned process in EWB-USA with the intent of making recommendations to EWB-USA for improvement while documenting approaches they have employed that have been successful. This
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project addresses two closely related questions based on these two aims:

- What elements of EWB-USA’s PMEL program have contributed to their becoming a more successful learning organization?
- What aspects of EWB-USA’s PMEL program could be improved to further enhance their ability to feed learning from one project into the next?

The scope of the analysis is limited to the organizational learning / lessons learned aspects of PMEL and will not address the overall impact assessment process. Also, although identifying specific lessons was not within the scope, one such lesson was identified and is included at Appendix D.

**Methodology**

The project took a two-pronged approach to answering the research questions. First, it sought to understand if EWB-USA has the characteristics of a learning organization, as defined by the literature, and what barriers they may be experiencing. Second, it was necessary to examine the way in which EWB-USA's learning takes place. The second prong involved identifying five things: where lessons arise and which are most important to EWB-USA; who needs to learn lessons; how these lessons are documented; how lessons are used to create learning; and how the results are shared with and made available to those to whom they are relevant now and in the future.

Two frameworks helped guide the research. First, the literature review offers several contexts for comparing elements of a normative lessons learned process. Several of the taxonomies proved convenient for identifying elements of organizational learning and barriers to it. The most useful of these is the NATO Lessons Learned Temple, which is an easily applicable synthesis of much of the thinking behind the other taxonomies and offers six simple elements that make up a viable lessons learned process. The other framework for this analysis was the Learning Strategy Implementation Plan included in the PMEL overarching document (EWB-USA, 2013, Section 8.5), which contains a step-by-step approach, with specific actions and
milestones, for how EWB-USA intended to implement the learning portion of PMEL.

Data collection was carried out in two principal ways: reviewing EWB-USA’s internal documentation and interviews with staff and chapter members. For the former, a sample of EWB-USA’s internal PMEL-related and project reporting documents were reviewed, including planning documents, project reports, archived lessons, and other post-project feedback. Two distinct projects were read through from beginning to end and over a dozen randomly selected 901Bs were reviewed and compared to the reporting made in the related 500 series report. This review provided an insight into what kind of information is being captured in EWB-USA’s project reporting process, where and how it is stored, and how accessible it is.

Interviews focused on building an understanding of the viewpoints and experience of EWB-USA staff and members with respect to PMEL specifically and organizational learning more generally, and sought to identify the perceived strengths and weaknesses of EWB-USA’s learning process. The interview protocol was designed in two parts. The first examined the extent to which EWB-USA is a learning organization, focusing on the foundations of mindset and leadership in the Lessons Learned Temple (Figure 1). Two studies cited in the literature review, Prugsamatz (2010), and Andjelkovic and Boolaky (2015), employed versions of the Dimensions of the Learning Organization Questionnaire (DLOQ) developed by Marsick and Watkins (2003) that were modified for use in nonprofit organizations. These authors kindly provided their interview protocols and survey instruments from which the questions for the first part of the protocol were derived. The second part of the interview focused on the learning process at EWB-USA. The questions for this part were derived from the line items in the PMEL Learning Strategy Implementation Plan and addressed the structures, processes, tools and sharing—the pillars and roof of the LL Temple—that make up EWB-USA’s learning process. The interview protocol is provided at Appendix C.

EWB-USA recently conducted a major cross-topic survey of project teams and chapters. The results from this survey (EWB-USA, 2015a), which were made available and systematically reviewed, contained much useful and insightful data on the viewpoints of chapters with respect
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to PMEL and the project reporting process and in large part alleviated the need to survey chapters specifically for this study.

In total ten interviews were conducted: with the IA director, all members of ICP, two members of VE, and five members of two student chapters. Interview notes were typed and sent to interviewees for further comment, then systematically coded to develop a set of preliminary findings that also included ideas from the literature and included the findings from the Project Process Survey results and the report content review.

These findings were analyzed in detail to develop thematic clusters that were then discussed with the client to arrive at a model for how and where learning is taking place in EWB-USA and what OLMs are in use. This model is presented in the results section. Conclusions about the extent to which EWB is a learning organization were then drawn by a comparison to the literature, allowing the barriers and strengths of EWB-USA’s learning process to be identified. Finally, recommendations were developed to address the weaknesses apparent in the existing learning process model.

Results

**EWB-USA as a learning organization**

The data indicate strongly that EWB has many of the characteristics of a learning organization. Interviews with members of HQ made clear that leadership is engaged, staff is aware of the importance of learning and are committed to it, mistakes are generally viewed as learning opportunities, and everyone is willing to take risks in order to introduce improvements in how EWB-USA does things. EWB-USA has demonstrated it is responsive to feedback that indicates changes are necessary by implementing several major changes in the last two years. Recent examples include redefining the role of VE, rebalancing workloads between teams, and placing new financial requirements on chapters and communities. The introduction of PMEL and establishment of a fulltime IA Director is another example of EWB-USA’s commitment to learning. HQ is strongest at learning at individual and team level. Individuals are given time to
learn and teams are given freedom to address issues and develop their own solutions.

At organization level, EWB-USA faces some barriers to being a learning organization. At HQ, despite having a very flat and open organizational structure, organization level stovepipes exist between teams. Interviews revealed that teams are open to working together and there is no protectiveness about sharing information but, as one interviewee said, "there is little interaction and little understanding of what learning could be beneficial across teams". The chapters interviewed reported that they are not uniformly learning organizations. Both chapters indicated that they saw issues arise repeatedly and, given the high turnover of students and the limited time they have available for EWB-USA work, they have difficulty reflecting on and sharing what their own chapter is learning. The implications of this finding are developed more fully in the section on reporting below.

Where lessons arise and which are most important to EWB-USA

Lessons arise primarily through project work; that is, through the activities of chapters in working with their community partners. It is chapters that design and implement projects and deal directly with EWB-USA’s partner communities, so it is they that need to be identifying the lessons. EWB-USA HQ relies on chapters to tell them what the community is teaching them.

There are three main kinds of lessons that arise through EWB-USA’s principal activities and which are directly related to achieving the mission and vision:\(^3\):

- **Technical lessons**: how best to do a particular kind of engineering project in the developing world;

- **Community lessons**: how a chapter can best partner with a community to implement a community-driven project that is sustainable and meets their needs; and

- **Chapter lessons**: how best to help chapters to do the other two things better.

Because EWB-USA’s purpose is to partner with communities, the community lessons are

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\(^3\) After being identified in early interviews, all subsequent interviewees agreed with this breakdown.
the most important to EWB-USA's carrying out its mission and achieving its vision. But it is not EWB-USA HQ that is working in communities directly; it is the chapters. Just as it is in chapters where lessons are identified, it is also in chapters where lessons must be learned and behavior changed to deliver better projects and programs. Therefore, the most important kind of lesson, the only kind where HQ can influence the quality of project being delivered, is Chapter lessons.

However, only the first two kinds of lessons are directly apparent to an individual chapter. The report review and interviews indicate that chapters know and report if they had to modify its technical design unexpectedly or had unanticipated changes in its relationship with the community. In general, chapters should understand why these things did not go according to plan or, conversely, if they went exceedingly well. An individual chapter can also apply its own lessons to its next trip or project (though there is an understanding in HQ that this does not necessarily happen systematically). But while a chapter may have notions about how EWB-USA HQ could have helped it anticipate the issues that arose, only HQ is in a position, by virtue of seeing all chapters' reports, to spot the trends and identify ways to help all chapters. This is true to an extent for all three kinds of lessons, but only HQ can figure out what needs to change in EWB-USA's overall procedures or approach that will help chapters across the board deliver better projects and only HQ can then drive those changes.

**How lessons are documented**

Technical and community lessons are only visible to EWB-USA HQ when chapters report them. Although chapters do provide feedback to various parts of HQ—principally to VE on issues of chapter and member relations to HQ—the vast majority of communication between chapters and HQ is via the project reporting process to ICP and relates to project work. Through the reporting process EWB-USA collects an enormous amount of data from chapters. To see a project through to completion requires completing ten 500 series reports, each ranging from 20

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4 This is not to downplay technical lessons. But quite simply, it is much easier to figure out a better way to build a livestock bridge than to figure out if that bridge is the long-term, most impactful solution to a community's problems or if the community will be able to take ownership of it after it is built.
to over 100 pages, and submitting concurrently up to five 900 series reports, which get updated as necessary during each project stage. The reporting process makes it possible to reconstruct, in detail, an entire project.

However, interviews and the review of the reports indicate that learning is not being documented as well as it could be. The review of reports revealed that the information contained in them is largely restricted to basic, factual reporting of what happened. They focus on technical aspects of the project and less on community aspects, except in those cases where there was a major problem with the relationship with the community. Even, perhaps especially, in the sections designed to capture learning and deeper understanding—the 901Bs and the lessons learned sections of 500s—the reported information is superficial, lacking development of the deeper understanding or root causes needed to support learning. The learning reported in the 500s is often inconsistent with that in the 901B from the same project stage and, although the two reports aim to capture different types of learning for different purposes, the inconsistencies indicate a disconnection within the chapter on what those drafting the reports think is important. Other sections of the reports, particularly the mentor comments, were seen to contain more insightful analysis about a project. While PEs said they do refer to these sections to understand how a project is progressing, these sections are not deliberately included in EWB-USA’s learning processes. PEs uniformly agreed the reported information is often superficial, focused on, as one PE said, "looking like they have their ducks in a row and getting approval for the next step."

Chapters acknowledged this, with one chapter member stating, "we are definitely guilty of not putting all the details in reports. We are never sure how EWB will react and, especially when a project is done and dusted, not sure it is worth finding out."

Interviews revealed some possible explanations for the poor quality of lessons reporting. First, staff at HQ expressed doubt that chapters are thinking at the community level or that chapters are open about their mistakes and learning. There was speculation that engineers or students, by their very way of thinking and level of experience, were mainly focused on designing and delivering a good technical solution. But every person interviewed, whether at HQ
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or in chapters, and most of them engineers, very clearly demonstrated a high level of understanding of the community issues and their importance to EWB-USA's mission and vision. The student chapter members interviewed were downright impressive in their understanding of the higher level issues involved in international development work. All interviewees also stated that the introduction of PMEL, despite the additional reporting burden it imposes, has clearly helped chapters link what they are doing technically with the long-term impact on communities and forced them to articulate it.

Interviews also brought out a potential conflict of understanding between chapters and PEs. As one chapter said in interviews: "you can't understand what's going on in the community unless you travel there." The PEs do not travel as a requirement of their position yet they are tasked with assessing if what the chapter is proposing or has just done is meeting the specific communities' needs. In reality, the PE can make a pretty good assessment based on personal experience and having seen many other projects. But chapters may think that PEs do not "get it" with their specific situation and so not be encouraged to report openly on the community aspects.

So if chapters do understand the importance of the community lessons why doesn't this kind of learning get included in reports? There appear to be two reasons. The first is the limited contact with the community. Chapters rarely travel more than once or twice a year and, with the high turnover of members in the student chapters, few individuals visit the community more than once, so there is not the continuity of contact that can lead to building the necessary trust to get feedback from the community. There appears to be very little that can be done to increase the frequency of contact between a chapter and a community that fits within EWB-USA's current model of engagement and given the limits its volunteer have for travel.

The second is the reporting burden. Interviews made clear that chapters fill out the report templates as quickly as they can without including the intellectual work to document higher-level lessons. Different individuals write different sections of reports, sometimes people who have not travelled themselves, and, often, no one person in a chapter reads both the 500s and 900s (or even the whole 500 all the way through). There is a lot of repetitive, administrative information
that must be filled in for each report template and some sections where deeper learning could be developed either ask for a list or have a certain sized box to fill in. The repetition and format are not conducive to articulating the type of thinking necessary to support learning. In interviews, chapters said that, given the time constraints and other demands of being students, they focus on filling in the report to the extent necessary to get approval for the next project stage and have little time to fully develop the intellectual implications of what they are reporting.

**How lessons are used to create learning**

The bulk of the communications with the chapters is through ICP and is project- and reporting-process related. The only people who read all the reports from more than one chapter are the PEs. This means that PEs are the single point where learning is accumulating. Most of EWB-USA's important lessons are in their heads. EWB-USA's OLMs (Lipshitz et al., 2009) play an important role in how this tacit knowledge leads to change and improvement in the way EWB-USA does business and in how it gets back to other chapters so they can apply it in their own ways.

EWB-USA has a couple of very powerful OLMs. These are mainly in ICP. The ICP Weekly Meeting, with its resulting PE Decision Sheet, is seen as an effective way to review and synthesize what chapters are reporting. The reporting process and the accompanying templates represent the stored learning for how to run projects and capture data from them. The annual Document Revision process is a way to change how chapters report to make it easier for them and still get the required data. Since the revision is based on input from chapters and PEs' own insight from reviewing reports, it is a way to document learning. But there are a number of things missing. Stuff that happens outside the reporting process—in other teams at HQ or within chapters but outside project work or trips—is not visible. Other teams, especially VE, are also learning in ways relevant to mission/vision but they do not seem to have any comparable OLMs. Interviews with staff indicated that the weekly Senior Management Meeting is not as powerful a tool for addressing learning as the ICP Weekly is to that team. And there appear to be very few
formal cross-team, working-level opportunities to synthesize what is being learned in ICP with what is being learned in other teams. Interviewees at HQ noted that places to document a lot of the learning and needed changes do not exist. A lot of what EWB-USA does as routine, whether at HQ or in the chapters, is not written down, so when it needs to be changed there is no place to record it. For example, there is no "project process bible" or "PE review process document" in ICP where suggested process improvements can be recorded, and other teams do not have anything analogous to the report templates as a repository of team knowledge.

Lastly, there has been relatively little use made of the raw data contained in the reports. ICP has done two crosscutting analyses of reporting data for best practices on technical learning (bio-sand filtration and composting latrines) but these were ad hoc and doing them took a PE away from his principal duties. IA will eventually report on higher-level learning related to long-term impact, but the first IA data collection trip was only completed in September 2015. IA is also producing a crosscutting report based on monitoring and evaluation results in a large cross-section of 500 series reports. Nevertheless, for the vast majority of reports, once they are initially reviewed, the contextual information within sits unread in the shared drive.

The principal reason for this is the sheer number of reports combined with the difficulty of finding which ones are relevant to a given topic. Reading through the entire set of reports for a single project takes approximately three hours. It is nearly impossible to do a crosscutting review of reports for a topic of interest because, quite simply, it is impossible to know what is in a report without reading it. The project database in place and the file structure of the shared drive allow finding reports by community, chapter, or major project type but do not indicate if there is content that addresses a certain specific issue or relates to a topic of interest. This of course is complicated by the aforementioned quality of the reports, especially in the learning sections. Efforts to index report contents have sporadically been attempted, mainly using Excel, but the results have so far not proved very useful.
How learning results are shared

In EWB-USA, the main pathways for learning are to and from chapters to HQ, directly among chapters, and with the wider world. As discussed previously, most communication between HQ and chapters is the reporting process. Chapters do provide information to EWB-USA through other channels—mainly VE or sometimes directly to the Executive Director—but not in a formalized way like reporting and to places in HQ without the OLMs that ICP has. Although EWB-USA is responsive to this kind of input in changing how it does business, it is unclear if that response is systematic or merely off the cuff.

Chapters say that communication is very one way. They report lots and feel as if they get little back. PEs do not broadcast changes or learning (e.g. decisions recorded in the PE Decision Document) but apply these one by one in individual report reviews. For chapters, the Resources Page on EWB-USA's current website should be an important source of learning, but both chapters interviewed said it was not easy to find what they wanted on the website and do not use it often. Comments in the Project Process survey reaffirmed this. In the course of this study, much time was spent examining the Resources Page and the conclusion was that chapters’ concerns about its level of usefulness are valid. One tool that has proven useful is the training webinars and "3-minute" videos that IA and ICP produce. The new blogs on the website do not yet appear to be well known among chapters and there appear to be very few other formal mechanisms to push learning to chapters.

There are very few ways for chapters to share directly with one another. The reports are not accessible outside of HQ because they are stored on an internal shared drive. So while there may be much of merit a chapter could learn by reviewing another chapter's reports, this is not currently possible. Some chapters do have relationships with geographically nearby chapters that have been seen to be fruitful. Two examples that became apparent are the close partnering between CU Boulder and Rocky Mountain Professionals and the collaboration between several Wisconsin-based professional and student chapters. The positive results in what these collaborations have been seen to deliver indicate it may be worth pursuing more such
partnerships, especially between professional and student chapters.

The principal means for HQ to communicate with chapters and chapters with each other is through the annual national and regional conferences. This is where HQ promulgates and explains major policy changes and where chapters can connect and share experience. This year there was a push to include examples of failure and the resulting learning in the presentations, which was reportedly well received by attendees. But conferences take place just once a year, and are limited in how many people can attend and time available at the event. They need to be supplemented with routine sharing of learning, particularly the chapter-to-chapter kind.

EWB-USA also is in a position to share its learning and expertise with the wider development community. Staff members do attend and present at conferences but there is much more room to publish in professional and even academic journals (the studies on best practices with composting latrines and bio-sand filtration come to mind here). There is also some collaboration that takes place within Posner Center, but overall, there is limited formal effort to share EWB-USA's hard won knowledge on development outside the organization.

**Discussion and Conclusion**

The major conclusion is that EWB-USA is not yet the learning organization it would clearly like to be. In terms of the LL Temple, within the HQ the foundations of mindset and leadership are in place while the pillars of structure, process, and tools still need to be matured. Using the taxonomies presented in the literature on levels of learning, HQ is very strong at individual learning, good at team level learning—especially within ICP, which serves as the hub for most of the relevant learning taking place across the organization—but still rather weak at the organizational level. Wellman would say that EWB-USA relies on for its learning its *old pros*, the PEs, and its *archives*, with the shortcomings in the reports described previously, with all the challenges that reliance on these two modes of organizational learning bring with them.

Referring to Schilling and Kluge's (2008) model (see Table 1), the major barriers to learning in EWB-USA are structural-organizational and societal-environmental, with the greatest
challenges being posed in the 4I processes of integrating and institutionalizing because of the lack of cross-team OLMs, lack of places to document learning outside of the project reporting process, and shortage of formal communication paths back to chapters. Intuiting too poses a challenge because of poor quality in the reports and their inaccessibility. The societal-environment barriers are largely the result of working with poor communities in the developing world. While it may not be possible for EWB-USA to eliminate these barriers, the very nature of their work does allow them to learn better ways to circumvent them. The recommendations given in this report are designed to address mainly the structural-organizational barriers and, since these barriers align neatly into Lipshitz et al.’s (2009) facet model under the structural facet, the focus on identifying existing OLMs and potential new ones appears to be further justified.

<table>
<thead>
<tr>
<th>Actional-Personal</th>
<th>Structural-Organizational</th>
<th>Societal-Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characterized by individual thinking, attitudes and behavior.</td>
<td>Intuiting: narrow job descriptions/high division of labor</td>
<td>Intuiting: complex environment, complex/ambiguous knowledge, implicit but immobile knowledge</td>
</tr>
<tr>
<td>Intuiting: None</td>
<td>Interpreting: missing link between knowledge and org. goals</td>
<td>Interpreting: None</td>
</tr>
<tr>
<td>Integrating: Lack of recognition</td>
<td>Integrating: inadequate communication between teams, institutionalizing: lack of time or resources, high turnover (in chapters)</td>
<td>Integrating: Time lag between action and environmental response</td>
</tr>
<tr>
<td>Institutionalizing: None</td>
<td>Institutionalizing: problems with linguistics/culture, technical/structural difficulties or storing implicit knowledge</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Barriers to organizational learning from Shilling & Kluge (2009) observed at EWB-USA

But EWB-USA is not just the HQ. There are 276 chapters that also must each be successful learning organizations. This is why the Chapter lessons are most important to EWB-USA and why it matters that HQ is a strong learning organization. The effectiveness of a lessons learned process is an outcome of whether or not the foundations (leadership and mindset) of a learning organization are in place. In EWB-USA, the culture is there, but not a fully mature process. According to Wellman (2008), having a good process is the most robust of the four methods for capturing organizational knowledge. So while learning and taking risk is encouraged, it is more individuals and some teams that benefit and are learning—not yet the whole organization. In many ways this finding relates to the difference between the theoretical content of the scholarly literature and the "things you can actually do in your organization" content of the handbooks. In order for EWB-USA to go from a learning organization on paper to
one that systematically learns from its experience (Milton, 2010), HQ needs to have the right OLMs in place to systematically take the learning being reported by chapters and turn that into guidance chapters can use to improve their projects. Based on the model for learning developed under the results section, EWB-USA’s ability to learn the lessons most relevant to its mission and vision depends in large part on the quality of reporting—especially as it relates to community lessons—what it does with the content of the reports, including the way it integrates the learning from reports with other information coming into HQ, and how the resulting learning is shared.

**PMEL contribution to becoming a more successful learning organization**

In answer to the first research question, simply having PMEL and a dedicated IA Director is in itself a strength of EWB-USA's approach to learning and amply demonstrates EWB-USA's commitment to learning. PMEL has been seen as major contributor to improving EWB-USA's ability to learn across the whole organization and to address some of the concerns. EWB-USA now has a much more structured approach to lessons and the input EWB-USA is looking for from projects. It has allowed, through the implementation of monitoring indicators, to start capturing time series data related to both technical aspects and community ownership of projects. Through the additional information being asked for in 900-series reports, it is asking chapters to think more about their communities and has absolutely helped chapters better connect the technical solution to the community solution. PMEL is however still a work in progress. ICP members commented that it has improved EWB-USA's ability to document learning but, as a relatively new process, there has not yet been time for analysis of the results. Although most initial resistance from chapters has been overcome, it is still somewhat misunderstood by them. The two chapters interviewed reported that it has not changed how they conduct their projects, only how they report on them. Overall, PMEL has not yet borne the fruits that most in EWB-USA expect it will in due time.

**Recommendations to EWB-USA**

In addition to the suggestions made by the Project Process Review Committee (EWB-
USA, 2015a), which the findings of this study fully corroborate, the following recommendations aim to improve EWB-USA’s learning process in ways directly related to the major findings: improving the quality of reporting; doing more with the information and data already on hand; and creating more OLMs and methods for sharing across HQ and the whole organization.

**Improve the quality of reporting** by providing better advice and guidance to chapters on what is expected while simultaneously making reporting less burdensome:

- As part of the Document Revision, the 900 series content should be rolled into the 500s and changes should be made to the way lessons information is asked for as described in Appendix E, in order to remove a perceived extra step for chapters and improve consistency between the two types of information being collected.
- More guidance should be provided to chapters on how chapters should approach drafting and reviewing reports internally to ensure high intellectual quality, versus merely providing instruction on how to fill them out.
- PEs and mentors should in their reviews provide more precise feedback to chapters when the learning sections of reports do not meet IA expectations for quality and depth of understanding.

**Do more with the data already on hand**, whether in reports or the tacit knowledge that primarily resides in the PEs’ heads, by creating more learning-related products, designed to be shared organization wide and published on the website:

- Chapters should include in pre-trip reports a review of their lessons from their own previous projects.
- HQ should ask chapters to do whole project reviews (i.e. 501 through 531) of projects completed by another chapter in order to identify lessons.
- PEs should routinely (monthly /quarterly) draft a 2-pager summary of the lessons they have seen over that period.
- IA should develop a number of prioritized "research questions" to drive cross-cutting reviews of existing reports that mainly address community and chapter lessons.
Create more OLMs and sharing mechanisms, that allow learning to be documented in accessible ways and shared across the organization:

- Each team—including senior management—should adopt the model used by ICP for weekly meetings and a running decision document.
- ICP, IA, VE, PDR and Accounting should meet monthly to discuss lessons.
- All reports should be shared with all chapters and more ways to share what one chapter is learning with others should be created, including creating more student-professional chapter partnerships.
- Create more places where EWB-USA processes are written down, to serve as a repository of learning for when these processes change. Examples would be a "PE how-to manual", a project process bible for ICP, and a comprehensive chapter management guide.
- The Resources section of the website should be updated for better search and sorting functionality.
- Individuals at EWB-USA HQ and in the chapters should publish articles in magazines and journals on what EWB-USA is learning about international development.

Limitations and implications for future research

There were several limitations on this study, primarily with respect to data collection. First, given EWB-USA’s concern about administratively overburdening its chapters, it was not possible to conduct a survey of a large number of them, limiting the chapter input for this study to that collected in interviews and the previously conducted project process survey. Since only two chapters, both student, agreed to be interviewed, chapter input specific to this project was limited to just two data points and, unfortunately, meant that no professional chapters provided their input. Although it is reasonable to assume, based on the common-sense nature of their comments and the triangulation that could be done with the project process survey, that their input was representative, a larger body of input would have lent credence to the findings with respect to the whether chapters are learning organizations and their approach to reporting. Also,
professional chapters may well have a very different perspective to student chapters.

Second, several efforts closely related to the topic of learning at EWB-USA were ongoing during the course of this study. A major revision of the reporting templates was begun in September and was still in progress as this report was being written. The direction and final result of this effort was not visible at that time but its outcome will have major importance to some of the findings of this study. Additionally, IA and ICP were together developing the user requirements for a new "IT Solution" to help with the archiving, accessibility, and analysis of project reports. This effort too, if successful, will have a major impact on EWB-USA's learning and much hope is being placed in the IT Solution to address many of the problems with using report contents. But this author would caution against an over-reliance on a software tool to do the organization's learning. Human thought and effort will still be required to record, read, digest and deliberately share the learning that is taking place. Whatever system is chosen should have a dedicated manager, not an IT expert but someone who is intimately familiar with the content.

One aspect of EWB-USA that did not get adequately included in this study was the role of the committees, yet it would seem that these too should play an important role in identifying and promulgating learning. Two points that arose in interviews do bear mentioning. First, after the ARC initially approves a program, no committee looks specifically at the community or chapter issues that arise in projects. Second, the TAC, which reviews and approves project designs for implementation, never receives feedback on how the implementation actually went.

The scholarly literature that concerns nonprofits found that organizational learning concepts from the for-profit sector also apply to nonprofits. Andjelkovic and Boolaky (2015) addressed this issue specifically, determining that the concepts of organizational learning were known and understood in nonprofits. They also found that a major difference to the business sector was that nonprofits must account for the role of stakeholders (e.g. communities, donors, partners). These findings were also evident in EWB-USA but with two additional insights. First, in EWB-USA, the concepts of organizational learning were rolled into PMEL, which is essentially their approach to program evaluation. Given the importance of program evaluation to
nonprofit operations (Tschirhart & Bielefeld, 2012) it could be that it is primarily through program evaluation that nonprofits express their understanding of organizational learning. Second, EWB-USA is a volunteer-based organization, and can only ask so much of its members. If the administrative effort to conduct, and learn from, projects becomes too great, then quite probably members will leave. EWB-USA must strike a balance in supporting both its volunteers and the communities its serves. Both these phenomena could merit further study when examining organizational learning in nonprofits.

Although developed independently, the approach used in this study to model EWB-USA's learning—identifying where lessons arise, which are most important to the organization, who needs them, how they are documented, how they are used to create learning, and how the results are shared—closely mirrors that proposed by Smith Milway and Saxton (2011) for creating a knowledge-sharing process. The implication is that this is a reasonable approach for helping establish a lessons learned process as well as for evaluating an existing one and, therefore, in future case studies of an organization's learning effectiveness, researchers may wish to employ this approach.

Finally, researchers in organizational learning, especially those conducting case studies of specific organizations, should take note of Bushouse and Sowa's (2012) recommendation to develop and include in their publications the implications for policy, practice, and/or management. As they say (p. 511), "scholars cannot afford to ignore the practical implications of their work if the field of nonprofit studies is to remain relevant. Relevance will foster more accessibility and connection to practice, continuing the development of the field as a whole."
References


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Engineers Without Borders – USA. (September, 2015a). *Ad Hoc Committee to Evaluate & Improve the EWB-USA Project Process Recommendations*. Denver, CO: EWB-USA.


Marsick, V.J., & Watkins, K.E. (May, 2003). Demonstrating the value of an organization’s learning culture: The dimensions of the learning organization questionnaire. *Advances in Developing Human Resources, 5*(2), 132-151


Appendix A – Overview of EWB USA's Project Reporting Process

INTERNATIONAL COMMUNITY PROGRAM PROJECT PROCESS

Adopt a New Program
No EWB-USA Chapter Affiliation Established (Open Program)

To receive a community
2 months to 1 year

502 Cluster Application to Acquire an EWB-USA Program

501B New Project Within Existing Program Application

EWB-USA Chapter Affiliation Established

501 Community Application for a New Program/First Project

&

502 Chapter Application to Acquire an EWB-USA Program

Assessment
6 months to 2 years after 501 Approval
(first implementation trip expected within 1 year)

521 Pre-Assessment Report

522 Post-Assessment Report

523 Alternative Analysis

524 Draft Final Design Report

Implementation
1 or more trips generally 1 - 3 weeks in length
Multiple implementations phases could span 2 or more years

525 Pre-implementation Report

525B Pre-implementation Report

501B New Project Within Existing Program Application

526 Post Implementation Trip

Monitoring & Evaluation
At least 1 trip, 1 year after final implementation is complete, but monitoring continues as long as chapter works in community

530 Pre-Monitoring & Evaluation Report

531 Post-Monitoring & Evaluation Report

Program Closeout

527 Program Closeout Report
<table>
<thead>
<tr>
<th>Submittal</th>
<th>Report No.</th>
<th>Purpose of Report</th>
<th>Revised 09/01/2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Project within an Existing Program</td>
<td>501B</td>
<td>An application for a new project to be completed under an existing program. For example, if a chapter had completed a water supply project with a community and now wanted to start a sanitation project, a 501B would be used to apply for the sanitation project. This document can also be used to expand the program to another community. If the chapter wishes to extend the program to a new community, strict requirements must be met.</td>
<td>The submittal deadline one month prior to the submittal of the pre-trip report for the project.</td>
</tr>
<tr>
<td>Pre-Assessment Report</td>
<td>521</td>
<td>To serve as a planning document for each assessment trip. Proper trip planning is needed to ensure that the team is safe and has sufficient time to accomplish all of the objectives of the assessment trip which include establishing relationships, verifying community priorities, assessing overall project feasibility, and collecting sufficient technical data to support the design of a sustainable engineering project.</td>
<td>Roughly 2 months prior to travel. Please login to the EWB-USA website for exact deadlines.</td>
</tr>
<tr>
<td>Post-Assessment Report</td>
<td>522</td>
<td>To present, summarize, and document the data and information collected during the assessment trip. Also requires the 501 – signed Project Partnership Agreement (after first assessment trip on the project) and 901 – Program Plan &amp; Baseline Study (for first assessment trip in program) or 501B – Program Impact Monitoring Report (subsequent assessment trips), 901 and 901B require the 905 – Program Logical Framework as well.</td>
<td>The submittal deadline between 30 and 60 days after return from the site.</td>
</tr>
<tr>
<td>Alternatives Analysis</td>
<td>523</td>
<td>To document the thought process that the chapter should go through to determine which alternative solution is best for a given situation. For example, if there are a number of different water sources that may be used for a water supply, the alternatives analysis would describe how the preferred source was chosen. There is no prescribed methodology for carrying out this analysis.</td>
<td>With the post-assessment report, the preliminary design, or at any time between.</td>
</tr>
<tr>
<td>Preliminary Design Report</td>
<td>524</td>
<td>This document presents a complete design that will be reviewed by the EWB-USA headquarters Project Managers. The intent is to provide review comments to the chapter that they can use to improve the project design documents prior to submitting the 525 pre-implementation document for TAC review.</td>
<td>The submittal deadline one month prior to the 525 submittal.</td>
</tr>
<tr>
<td>Pre-Implementation Report (Final Design)</td>
<td>525</td>
<td>To present the final design of the project and the details of the proposed implementation trip. The document should be sufficiently detailed that someone with no background with the project would be able to use the document to construct all the proposed facilities. The document should be of the quality that would be sealed by a professional engineer for a project in the US. Also requires the signed 903 – Implementation Agreement.</td>
<td>Roughly 3 months prior to travel. Please login to the EWB-USA website for exact deadlines.</td>
</tr>
<tr>
<td>Pre-Implementation Short Form Report</td>
<td>525B</td>
<td>This report requests permission to travel on an implementation trip that has already been approved by the TAC. Examples where this document should be used are: a) the construction will be phased over more than one trip but the entire design and construction has been approved by the TAC, b) difficulties during a trip resulted in construction not being completed and the chapter must return to finish the construction or c) the chapter had to postpone an implementation trip that had been approved by TAC.</td>
<td>Roughly 2 months prior to travel. Please login to the EWB-USA website for exact deadlines.</td>
</tr>
<tr>
<td>Post-Implementation Report</td>
<td>526</td>
<td>To present, summarize, and document the activities and results of the implementation trip. This report also provides an opportunity to propose and describe future program activities such as continued construction activities, monitoring and evaluation of the implemented project, or assessment of future projects. Also requires the 901 – Program Impact Monitoring Report, which includes the 905 – Program Logical Framework as well.</td>
<td>The submittal deadline between 60 and 90 days after return from the site.</td>
</tr>
<tr>
<td>Program Closeout</td>
<td>527</td>
<td>To ensure that the projects are functioning properly and that the community is properly prepared to take over responsibility and ownership of the projects that were implemented under the program. Chapters must perform an evaluation trip at least one year after the final implementation before closing out a program. Also requires an updated 901B – Program Impact Monitoring Report, which includes the 905 – Program Logical Framework.</td>
<td>Any time after the final monitoring trip. At least 1 year after last implementation.</td>
</tr>
<tr>
<td>Pre-Monitoring &amp; Evaluation Report</td>
<td>530</td>
<td>For planning a monitoring &amp; evaluation-only trip. Proper trip planning is needed to ensure that the team is safe and has sufficient time to accomplish all of the objectives of the monitoring &amp; evaluation trip which include identifying any issues post-construction, gathering technical data for purposes of determining project success, and establishing the community’s financial and operational capacity to maintain the project.</td>
<td>Roughly 2 months prior to travel. Please login to the EWB-USA website for exact deadlines.</td>
</tr>
<tr>
<td>Post-Monitoring &amp; Evaluation Report</td>
<td>531</td>
<td>To present, summarize, and document the data and information collected during the monitoring &amp; evaluation trip. Also requires the 901B – Program Impact Monitoring Report, which includes the 905 – Program Logical Framework as well.</td>
<td>The submittal deadline between 30 and 60 days after return from the site.</td>
</tr>
</tbody>
</table>
### Learning Lessons at EWB-USA

#### 900 - EWB-USA Planning, Monitoring, Evaluation and Learning (PMEL) Reporting Summary

**09/01/2013**

<table>
<thead>
<tr>
<th>Submittal Description</th>
<th>Report No.</th>
<th>Purpose of Report</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Plan and Baseline Study</td>
<td>901</td>
<td>A tool intended to gather important data at the onset of the program to allow the organization to track progress and adapt program delivery models to more effectively meet the needs of our partner communities. It should help chapters develop a clear set of tasks to accomplish in their work with individual communities.</td>
<td>Draft: Submitted per the deadline for the associated pre-assessment trip report. Final: Submitted per the deadline for the associated post-assessment trip report.</td>
</tr>
<tr>
<td>Program Impact Monitoring Report</td>
<td>901B</td>
<td>To serve as a monitoring document for each site visit to the community. Information gathered through this document will be used to understand and report on changes that are taking place as a direct or indirect result of the program; and to compare results against baseline studies and previous impact monitoring reports.</td>
<td>Submitted per the deadline for the associated post-assessment trip report.</td>
</tr>
<tr>
<td>Project Partnership Agreement</td>
<td>902</td>
<td>A contract between the chapter, the local, in-country partners (NGO/government) and the community which outlines the roles and responsibilities of each party to the agreement for the purpose of setting guidelines for the project and establishing a commitment between all parties at the onset of project design.</td>
<td>Submitted per the deadline for the associated post-assessment trip report.</td>
</tr>
<tr>
<td>Implementation Agreement</td>
<td>903</td>
<td>A contract between the chapter, the local, in-country partners (NGO/government) and the community which outlines the roles and responsibilities of each party to the agreement during implementation of the project and during the maintenance phase after construction is complete.</td>
<td>Submitted per the deadline for the associated pre-implementation trip report.</td>
</tr>
<tr>
<td>Program Logical Framework</td>
<td>905</td>
<td>An instructional document that describes the project development approach which enables the main elements of a program to be concisely summarized and brings structure and logic to the relationship between program purpose and intended inputs, planned activities, and expected results.</td>
<td>Submitted as part of each 901 and 901B.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program Documents Not Submitted</th>
<th>Document No.</th>
<th>Purpose of Document</th>
<th>For Use When Submitting These Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMEL Lead Qualifications</td>
<td>904</td>
<td>A document which describes the qualifications and responsibilities of the EWB-USA PMEL Lead. EWB-USA PMEL Leads are chapter members who contribute to the work of the project team by developing tools to effectively plan, monitor and learn from their project work to facilitate long-term success in our partner communities.</td>
<td>PMEL Lead is identified at the onset of the program and should be identified in the contact list of all reports.</td>
</tr>
<tr>
<td>Project Monitoring Indicators</td>
<td>906</td>
<td>A tool for selecting project indicators that reflect back to the goals of the specific project and allow teams to assess whether or not they are on target to meet those goals through the project activities that they are undertaking.</td>
<td>905 and all post-trip report project monitoring sections: 522, 528, 531 and 527</td>
</tr>
</tbody>
</table>
## Appendix B – Table of Taxonomies from the Literature

<table>
<thead>
<tr>
<th>STUDY</th>
<th>TYPE OF TAXONOMY</th>
<th>CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senge (2006)</td>
<td>Ways of Thinking</td>
<td>Personal Mastery</td>
</tr>
<tr>
<td>Lipshitz et al. (2002)</td>
<td>Facets of Organizational Learning</td>
<td>Structural Facet (Organizational arrangements necessary for attributing learning to organizations)</td>
</tr>
<tr>
<td>Lipshitz et al. (2002)</td>
<td>Facets of Organizational Learning</td>
<td>Cultural Facet (Normative behaviors that generate productive learning)</td>
</tr>
<tr>
<td>Lipshitz et al. (2002)</td>
<td>Facets of Organizational Learning</td>
<td>Shared Vision (Psychological states that determine the extent to which individuals enact these behaviors)</td>
</tr>
<tr>
<td>Lipshitz et al. (2002)</td>
<td>Facets of Organizational Learning</td>
<td>Team Learning (Policy Facet: How management can facilitate organizational learning)</td>
</tr>
<tr>
<td>Lipshitz et al. (2002)</td>
<td>Facets of Organizational Learning</td>
<td>Systems Thinking (Contextual Facet: Features of the environment that promote or inhibit organizational learning)</td>
</tr>
<tr>
<td>Crossan et al. (1999)</td>
<td>Levels of Learning</td>
<td>Individual Means of learning across levels: Intuiting</td>
</tr>
<tr>
<td>Kluge &amp; Schilling (2003)</td>
<td>Research Perspectives organizational learning</td>
<td>Information Processing (Learning as a reaction to deviations from expected outcomes)</td>
</tr>
<tr>
<td>Kluge &amp; Schilling (2003)</td>
<td>Research Perspectives organizational learning</td>
<td>Knowledge Management (Methods by which organizations spread explicit information by using IT tools)</td>
</tr>
<tr>
<td>Kluge &amp; Schilling (2003)</td>
<td>Research Perspectives organizational learning</td>
<td>Organizational Culture (How organizational learning is influenced by culture and attributes that characterize it)</td>
</tr>
<tr>
<td>Kluge &amp; Schilling (2003)</td>
<td>Research Perspectives organizational learning</td>
<td>Strategic Management (How learning enables a firm to excel)</td>
</tr>
<tr>
<td>Wellman (2007)</td>
<td>Methods of Capturing Organizational Knowledge</td>
<td>Culture (Behaviors and operating principles that everyone knows but which are not written down)</td>
</tr>
<tr>
<td>Prugsamatz (2010)</td>
<td>Levels of Learning</td>
<td>Individual motivation (What factors motivate individuals to learn and contribute to their organization’s learning)</td>
</tr>
<tr>
<td>Prugsamatz (2010)</td>
<td>Levels of Learning</td>
<td>Team Dynamics (How do the ways teams work (power, communication, empowerment) affect organizational learning)</td>
</tr>
<tr>
<td>Prugsamatz (2010)</td>
<td>Levels of Learning</td>
<td>Organizational Cultural Practices (Can the culture in an organization promote or deter learning)</td>
</tr>
<tr>
<td>Whatley (2013)</td>
<td>Dynamics of a Strong Learning Organization</td>
<td>Committed leaders</td>
</tr>
<tr>
<td>Smith Milway &amp; Saxton (2011)</td>
<td>Elements of a Organizational Learning</td>
<td>Supportive Leaders</td>
</tr>
<tr>
<td>Smith Milway &amp; Saxton (2011)</td>
<td>Elements of a Organizational Learning</td>
<td>Culture of Continuous Improvements</td>
</tr>
<tr>
<td>Smith Milway &amp; Saxton (2011)</td>
<td>Elements of a Organizational Learning</td>
<td>Intuitive Knowledge Process</td>
</tr>
<tr>
<td>Smith Milway &amp; Saxton (2011)</td>
<td>Elements of a Organizational Learning</td>
<td>Defined Learning Structure</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td>Characterized by individual thinking, attitudes and behavior.</td>
<td>Intuiting: Biases, Superstition, Stress, focus on first order problem solving</td>
</tr>
<tr>
<td></td>
<td>Interpretating: Fear of loss of control, lack of political/social skill, conflictual relationships, group's lack of motivation</td>
<td>Interpreting: Organizational culture, missing link between knowledge and org. goals, Divergent objectives, hidden agendas</td>
</tr>
<tr>
<td></td>
<td>Integrating: Lack of recognition, fear of punishment, lack of formal authority, lack of top mgmt. support, managers' overconfidence in existing practices, forced top-down change</td>
<td>Integrating: Competition between teams, inadequate communication between teams, power structures, power structures, Ineffective resource allocation, lack of learning oriented values</td>
</tr>
<tr>
<td></td>
<td>Institutionalizing: Perceived irrelevance of the innovation, insufficient knowledge to implement the innovation, inadequate leadership skills, cynicism towards organization, low support for new ideas, opportunistic behavior</td>
<td>Institutionalizing: Static conditions of the workplace, lack of time or resources, high turnover, unclear responsibility for the innovation, organizational hypocrisy, inconsistent org. strategy, policy or practices,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NATO (2011)</th>
<th>Elements of a successful lessons learned capability (the Lessons Learned Temple)</th>
<th>Leadership (Foundation)</th>
<th>Mindset (Foundation)</th>
<th>Structure</th>
<th>Processes</th>
<th>Tools</th>
<th>Information Sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stakeholders must have a desire to improve and a desire to share that improvement for the greater benefit of the organization as a whole.</td>
<td>Stakeholders must be engaged, be provided with high quality, actionable written products, and they must give direction based on those products and hold accountable to the appropriate stakeholders and action bodies</td>
<td>Policies establish a clear delineation of learning procedures and responsibilities</td>
<td>There are two parts to the structures: the policy and the people. Policies</td>
<td>There are internal and external processes. The former provides the requisite mechanisms to facilitate the gathering of observations, analyze them and take remedial action. The latter provides the ability to access, view and share lessons from/to external sources.</td>
<td>The tools required for a LL capability are technological tools to facilitate staffing and sharing of lessons and training and education: some form of LL database, preferably one that is compatible and accessible across all parts other organization; education and training is crucial to ensuring a common understanding of the process and a commonality of execution.</td>
<td>Learning is only valuable when it is shared. Both raw data and analysed, validated lessons must be accessible to all stakeholders, by both pull and push methods. This sharing can take place both with technological tools and through organizational processes.</td>
</tr>
</tbody>
</table>

| Critical Success Factors | Leadership Engagement | Stakeholder Responsibility | Quality Assurance |
Appendix C: Interview Protocol

Thank you for taking the time to be interviewed. This interview should take about 90 minutes to complete.

Note on Lessons definition.

This interview is designed to capture insights on two major aspects of EWB-USA learning strategy. The first part focuses on organizational and culture issues in an attempt to identify what factors may help or hinder EWB’s being a successful learning organization. The second part of the interview asks about the extent to which EWB-USA’s learning strategy, as identified in the PMEL program—has been successfully implemented and reasons for success or failure. The interview is structured along the lines of the LL Capability Temple.

Part 1: EWB-USA as a learning organization (Leadership and Mindset)
This first part is about “learning organization” and organizational culture

Mindset
One definition of a learning organization is one that makes reflection, feedback and sharing of knowledge part of the way it functions on a day-to-day basis. Given this definition, in your opinion is EWB a successful learning organization?

Why? What factors make it so?

One definition of a lesson learned is a change in individual or organizational behavior, as a result of learning from experience. Does EWB actively change its organizational behavior based on experience? Whose experience (HQ staff, project teams, other)? Who changes?

Can you give me an example of successful learning from experience at EWB?
What are the kinds of lessons are being learned in EWB and who is learning them?

What kind of lessons is most important to EWB achieving its vision?
Are people here given time to support their own learning? Examples? Why or why not?
Are people here given time to support the organization’s learning? Examples? Why or why not?

Do you help each other learn? How?

Talk to me about EWB’s Theory of Change.
Leadership
Does EWB leadership support learning and learning based improvement by giving time and resources? Are reflection, feedback and sharing of knowledge a priority? If not, what is?

Is leadership consistent between its words and actions on the importance of learning?

If it becomes obvious that EWB needs to change the way it does something, how is that made to happen? Can individuals and/or teams take the initiative or does it require direction from above to make it happen?

How are failures and mistakes viewed in EWB?

Do you think chapter members and communities feel comfortable providing honest feedback which accepts and learns from mistakes?

Does EWB have methodologies and opportunities for incorporating learning into future plans?

Part 2: PMEL put in practice
This part of the interview is designed to understand the lessons learned process put in place through PMEL and identify if the resulting structure, process, and tools help or hinder EWB’s ability to learn from its experience.

General Questions
Has implementation of PMEL has been a good thing?

How far along in implementing the PMEL learning strategy is EWB? What’s missing?

Has PMEL improved EWB’s ability to document, analyse, and incorporate into its process the learning that takes place? If so, in what ways?

Structure
Who is responsible for identifying lessons from project work? Non-project work?

Who is responsible for figuring out what needs to be done based on a lesson, for developing the recommended remedial action or good practice?

Who is responsible for implementing recommendations?

Who is responsible for sharing the resulting knowledge or change in the way EWB does business, that is informing everyone who needs to know that the change has taken place?

How do you see the relationship between EWB's learning strategy and it's approach to impact analysis?

What is your role in organizational learning at EWB compared to Tiffany’s?

Process
How are lessons that arise from activity at EWB identified and captured / recorded?

Do you think the sections for lessons and learning in the 500 and 900 series reports adequately capture actionable lessons (by actionable, I mean, they explain well enough what happened vs. what was supposed to happen and justify taking the specific remedial action)?

How is the information in the 900s compared to the reported "lessons learned" in the 500s?
What about other sections of these reports? If there are things worth learning there (say in the Mentor's comments) not in the lessons section, does that get captured and acted upon?

How do you filter the "Don't forget sunscreen" kind of lessons from the impactful, “we need to change how we do things” kind of lessons?

What about lessons that don't arise from project work? Can you think of examples of these and how they get captured?

How are proposed solutions developed and analysed for their potential impact (positive and negative)?

How is implementation followed up on and that the change actually led to improvement?

**Tools and Sharing**

Does EWB document results of data analysis and impact monitoring in a systematic way?

How easy is it to find that documentation, say, for a specific topic?

Does EWB have the right IT tools in place to access reports, lessons, and the results of analysis easily?

What suggestions would you make here?

How do you exchange information and lessons with other organizations or the wider world (in and out)?

Does EWB have defined and applied strategies for sharing the learning from project reporting across the reviewing PM team?

**Close-Out**

What are the biggest strengths and weakness in the way EWB manages its learning process?

Do you have any suggestions for how to improve EWB’s lessons learned process?

Do you have any other things you’d like to sharing about EWB’s lessons learned process or PMEL more generally?

Do you have any suggestions for other people I should talk to or documents to read?

Any other comments?

THANK YOU
Appendix D: Lesson Identified

Effects of Canceling Travel

Although it was not the intention of this project to identify specific lessons from EWB-USA project work, one did become apparent during the course of the report reviews and interviews with chapters. This is the negative effect on chapter–community relationships when chapter travel must be canceled. Two projects reviewed had travel canceled shortly prior to an implementation trip. In one case, travel was canceled by the university over safety concerns. In that case, a nearby professional chapter that also has a program in the same community was able to carry out the implementation on the student chapter's behalf, but the chapter members indicated that they lost a valuable opportunity to maintain their individual relationships with community members. In the other case, travel was canceled because the TAC disapproved the design. In that case, because of student schedules, implementation was delayed over nine months and no member of the chapter visited the community between the assessment and rescheduled implementation trip, a period of over a year and a half. When the chapter did return to the community they found there had been a complete breakdown in the relationship. Although there were complicating factors beyond the canceled trip, the long time between visits had allowed problems to grow while community members lost trust that the chapter could deliver as promised. Overall, given the importance of the community aspects to EWB-USA success, canceling trips should only happen when absolutely unavoidable, such as imminent danger in the area. For cases where a chapter is not ready to carry out the next phase of their project, and where it is not possible to postpone the trip for more than a few weeks (which is difficult given school and work schedules) some members should still travel, perhaps under the guise of an additional assessment trip, in order to maintain and build relationships while also demonstrating the chapter's commitment to deliver.
Appendix E: Suggested format for the Learning section of 500 series reports

As part of the Document Revision, the following changes should be made to the report templates.

- Insert the contents of the 901, including the 905 Logical Framework, into the 502, and include a section in the 521 to update the baseline information as appropriate.
- Insert the contents of the 901B, including the 905 Logical Framework, into the 5.0 Lessons Learned section of the 522, 524, 526, 527 and 531.
- Rename that section "PMEL reporting".
- Replace all tables to be filled in with space for free responses (i.e. Sections 2.3 and 2.9)
- Add a section after the logical framework that asks for evidence that the framework is correct or which justifies modifying it based on experience.
- Section 2.9 (which would become 5.9 should the reports be rolled together) should be constructed as follows:

5.9 Lessons Learned

Technical
What should your chapter do differently with respect to designing / implementing / monitoring this kind of project (i.e. sanitation, civil works, etc.) next time based on your experience this time?


Community
What should your chapter do differently with respect to building relationships with the community next time based on your experience this time?


What should your chapter do differently with respect to building understanding of the community's needs next time based on your experience this time?


What should your chapter do differently with respect to working with your NGO partner next time based on your experience this time?

___________________________________________

5 In may be appropriate to include lessons questions covering chapter's experience with travel, health, and safety as well.

Chapter Support
What should EWB-USA do differently to better support your chapter going forward with this project / program?


What should EWB-USA HQ do differently to better support a future chapter:
Doing this kind of project?
Working in this area or with this community?
Working with this NGO partner?