

Further Investigations of Army Lifelong Learning: An Enhanced Assessment Framework

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ABSTRACT

The lifelong learning concept has been advanced as an Army-wide solution to the problem of meeting the educational demands of a rapidly changing operational environment. Lifelong Learning Centers (LLCs) comprise a suite of technologies that enable, among other things, online posting of schoolhouse curriculum materials, courseware downloads, and distributed collaboration among users. Previous research (Cianciolo, 2007) has produced a comprehensive framework for conceptualizing how resources invested in LLCs can produce change to instruction, learning, and organizational effectiveness. It was demonstrated that the framework was a feasible and useful tool for conducting a program evaluation of LLCs as applied to leader education, but the limited scope of the study prevented an explicit test of the generalizability of the assessment framework. The present study examined the generalizability of the assessment framework to military operational specialty (MOS) qualification training. The assessment framework generalized across the two different types of LLCs, but modification was necessary in order to reflect additional determinants of organizational impact. These additional determinants were factors external to the sphere of influence of the LLC, chiefly personnel management and institutional training procedures, which can moderate the relation between outputs and outcomes. Some modification also was made to metrics and measures in order to include more generalizable and usable methods for capturing LLC outcomes. Lifelong learning assessment lessons learned were documented and integrated into a general plan for future LLC assessments.

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LIFELONG LEARNING AND THE MODERN WARRIOR

The Soldiers in today's Army face unprecedented levels of complexity in their operating environment. The particular challenges of asymmetric warfare and counterinsurgency are well recognized and documented (e.g., *FM 3-24: Counterinsurgency*; see also Chiarelli & Michaelis, 2005; Williams, 2003), but these challenges only partially represent the body of knowledge and skills that must be acquired to succeed. The Army itself is rapidly changing, adopting new command, control, and communications technologies, new unit structures and personnel management practices, and new performance objectives. Moreover, the politically sensitive and highly public nature of actions taken by U.S. Soldiers significantly broadens the impact of mistakes. Consequently, Soldiers must develop the capability to execute more difficult tasks, more often, and under greater pressure. A new approach is required to enable training and education that both meets rigorous standards for content and instructional strategy and enables the development of just-in-time competency throughout a Soldier's career (Wilson & Helms, 2003).

Overview of the Lifelong Learning Initiative

The U.S. Training and Doctrine Command's (TRADOC's) lifelong learning concept has emerged as an Army-wide approach to providing training on an as-needed basis in response to rapid changes in the operational environment. Lifelong learning is defined as "a mixture of traditional schoolhouse resident education with education presented in other locations at the individual's teachable moment" (TRADOC, 2004, see also Cianciolo, 2007).

Simply stated, the purpose of the lifelong learning concept is to fundamentally change the way Soldiers interact with their proponent schoolhouse. Its intent is to enable anytime, anywhere access to institutionally approved learning content by leveraging information technology and advanced instructional strategies, including performance assessment and after action

reviews (Wilson & Helms, 2003). Such access not only would benefit Soldiers, but the schoolhouse as well, by linking the operating and generating forces in a rapid cycle of learning content development and distribution.

Lifelong Learning Centers

Lifelong Learning Centers (LLCs) are the concrete instantiation of the lifelong learning concept, the portals through which globally distributed learners reach back to the institution. They provide web-based access to the instruction provided by the proponent schoolhouse. LLCs comprise a suite of technologies that enable, among other things, online posting of schoolhouse curriculum materials, courseware downloads, and distributed collaboration among users. Pilot LLCs have been established at the U.S. Army Signal Center, the U.S. Army Command and General Staff College, and the U.S. Army Maneuver Support Center, among other locations. The long-term vision for the lifelong learning initiative is to enable the delivery of anytime, anywhere instruction by all TRADOC schoolhouses.

Previous LLC Assessment Research

The research presented in this conference paper follows from a previous Army Research Institute (ARI) funded effort to explore metrics and methods for assessing LLCs (Cianciolo, 2007). Initial attempts by LLC program managers and staff to develop metrics for success focused on the activities conducted by LLC personnel (e.g., number of courses placed online) and other easily quantifiable data (e.g., number of students enrolled). Although such metrics were important reflections of personnel task execution, they did not address larger questions of interest to decision makers at the organizational level.

Unanswered questions centered on the "so what?" of implementing LLCs. Did LLCs enhance the efficiency and effectiveness of instruction? Did they improve readiness? Did they reduce the costs of education? ARI sought to develop a generalizable framework for assessing LLCs that could be used to answer these

questions. A secondary purpose of that investigation was to conduct a formative assessment of the pilot LLC established at the Command and General Staff College, Fort Leavenworth.

A combination of literature review, interaction with stakeholders, and data collection, was used to perform the research. A comprehensive, generalizable framework was developed for conceptualizing how resources invested in LLCs can produce change to instruction, learning, and organizational performance. The formative assessment of the Fort Leavenworth LLC demonstrated that the framework was a feasible and useful tool for conducting LLC program evaluation. Using the framework, the influence of the LLC technologies on instructional efficiency and effectiveness relative to other factors could be identified.

An important limitation of the initial LLC assessment research was that the design of the assessment framework was based on an unrepresentative sample of LLCs ($N = 1$, Fort Leavenworth). The small size of this sample prevented an explicit test of the generalizability of the LLC Assessment Framework. The purpose of the Fort Leavenworth LLC was to support the delivery of field grade leader education, but other LLCs were established (or have been conceptualized) to enable junior leader education, military operating specialty qualification (MOSQ) instruction, and/or military graduate-level education (e.g., judge advocate instruction).

It therefore remains to be determined whether the original LLC Assessment Framework applies as expected to these other LLCs, particularly those that deliver MOSQ instruction. Leader and advanced military education vice MOS-qualification instruction have different learner audiences and require different learning environments, instructional strategies, and performance assessment and feedback methods. Moreover, the instruction supported by MOS-based LLCs may have a more direct impact on mission readiness (e.g., through the just-in-time development or retraining of skills necessary to perform mission essential tasks) and potentially broader implications for cost savings (e.g., by using simulations as a substitute for expensive hands-on training equipment).

OVERVIEW OF THE PRESENT RESEARCH

The research presented in this paper was sought by TRADOC in order to extend the findings of the previous ARI research and to leverage ARI support for continued development of the lifelong learning

initiative. Its primary objective was to examine the generalizability of the LLC Assessment Framework and to revise the framework to ensure its broad applicability.

To meet this goal, the sample size of LLCs considered was expanded to two--the Fort Leavenworth LLC and the Fort Gordon LLC. Although still small, this sample size represented two-thirds of the population of well-established LLCs and addressed the distinct needs of MOS-based LLCs relative to LLCs focused on leader education. Selecting the Fort Gordon LLC also enabled detailed analysis of the broad range of training and education strategies that LLCs could offer, including simulation downloads and training on demand. The range of learning strategies featured in the Fort Gordon LLC was expected to represent the majority of strategies applied by current and future LLCs.

An in-depth examination of the Fort Gordon LLC was conducted via interviews, literature review (where applicable), and program analysis. The ways in which the assessment framework had to be modified to address the diverse needs of LLCs were identified and integrated into a revised framework. An assessment of the Fort Gordon LLC also was conducted, but due to space limitations, it is not detailed here (see Cianciolo, 2008 for the assessment findings).

A second objective of this research was to explore the requirements of LLC self-assessment. This exploration was to include an investigation of the feasibility of automated data collection as well as the capabilities and number of required personnel and technologies. Requirements and methods for conducting LLC self-assessment were determined via a combination of interviews, literature review, and examination of LLC assessment lessons learned.

LLC ASSESSMENT FRAMEWORK MODIFICATIONS

Every attempt to maximize the generalizability of the LLC Assessment Framework was made in the previous ARI-funded research by including program-level stakeholders in the design process as well as high-level representatives of LLCs other than the one at Fort Leavenworth. However, an in-depth examination of the Fort Gordon LLC was conducted to put the generalizability of the assessment framework to the test. The Fort Gordon LLC was selected because it was the longest running LLC and because it provided a large variety of instruction that could be considered representative of the types of instruction most LLCs would offer (e.g., MOSQ instruction, simulation

downloads, on-demand training, leader education, etc.).

In this section, a brief review of the original LLC Assessment Framework is provided, followed by an overview of the Fort Gordon LLC and a discussion of the necessary revisions to the original assessment framework.

The Original LLC Assessment Framework

The design of the original LLC Assessment Framework was based on the logic model approach to conducting program evaluation (McLaughlin & Jordan, 2004). Logic modeling links resources invested in a program to organizational impact through staff and stakeholder activities, program outputs, and anticipated outcomes at the individual and small group or community level. A logic model can be thought of as a “high-payoff target list” for conducting assessment. That is, the elements of a logic model are those assessment targets that must be captured in order to conduct an informative, diagnostic program evaluation.

A logic model also may be thought of as a hypothesis or “qualitative causal model” of how a program achieves impact. Assessment results at the end of the causal chain (i.e., impact) may be explained by

findings further up along the causal chain (e.g., effectiveness of staff activities, productivity). Logic models are commonly used for assessing programs that do not have simple return-on-investment metrics, such as social service interventions (e.g., parenting classes, health literacy initiatives), and may readily be adopted for non-profit educational initiatives.

To briefly summarize, *resources* in the LLC logic model were the investment of money, labor, facilities, and technology into an LLC. *Activities* were the use of resources by personnel to enable anytime, anywhere access to proponent learning content. The *output* of an LLC was represented by the access to and use of the portal and its contents by Soldiers. *Short-term, intermediate-term, and long-term outcomes* represented the instructional, individual, and organizational benefits achieved by providing anytime, anywhere access to proponent learning content.

For each of these components of the LLC logic model, categories of metrics and associated measures were developed. Table 1 below shows an example metric category associated with instructor activities as well as the associated metrics and measures. For a detailed presentation of the original LLC Assessment Framework, see Cianciolo (2007).

Table 1. Example Metrics and Measures for Instructor Activities in the Original LLC Assessment Framework

Metric Category	Metric	Measure
Instructor Activities -- (Early adopters) Lead the development of standard operating procedure (SOPs) for leveraging the capabilities of system components (e.g., collaborative capabilities in software platform)	Presence of formal SOPs for leveraging the capabilities of the software applications for course administration and facilitation (Y/N)	Instructor survey + Tech staff survey
	Presence of informal SOPs for leveraging the capabilities of the software applications for course administration and facilitation (Y/N)	Instructor survey
	% of early adopters involved in SOP development	Instructor survey
	Presence of formal SOPs for leveraging the capabilities of the software applications for course administration and facilitation (Y/N)	Instructor survey + Tech staff survey

Overview of the Fort Gordon LLC

The Fort Gordon LLC (also known as LandWarNet eUniversity - Signal) hosts standardized, approved proponent curriculum materials in a web-based environment that is accessible to learners (regardless of location) 24 hours a day, 7 days a week. The Fort Gordon LLC also provides one-stop access to online discussion forums. It differs significantly from the Fort Leavenworth LLC in the nature of its instructional

content and, by extension, its expected impact on mission readiness. In contrast to leader instruction, the Fort Gordon LLC offers MOSQ instruction, simulation downloads, and training on demand.

MOSQ Instruction

Anytime, anywhere MOSQ instruction is expected to have a more direct impact on readiness than leader education for multiple reasons. First, MOSQ training addresses specific skills that constitute effective

individual and collective performance in the field. Absence of these skills affects readiness by reducing the number of Soldiers in a unit who can carry out the unit's mission essential tasks. The absence of leader skills certainly impairs readiness, but the link between formal leader education and leader effectiveness in the field is subject to a greater number of moderating factors [i.e., acquisition and use of experience-based or tacit knowledge (Tan & Libby, 1997; Wagner & Sternberg, 1985)].

Second, MOSQ instruction available "anywhere" enables Soldiers to learn independently of seats in the schoolhouse. Backlogs of students awaiting reserved seats in the schoolhouse reduce readiness by decreasing the percentage of personnel in units who are qualified to perform their jobs (Cianciolo, 2007; Shanley, Leonard, & Winkler, 2001). Moreover, personnel who are not available to the unit because they are attending schoolhouse instruction (or because they are not yet MOS-qualified) reduce the training and mission readiness of the unit (Leonard, Winkler, Hove, et al., 2001). Making MOSQ training available anywhere enables Soldiers to learn from home, from local technical centers, or from deployed locations, thus avoiding long-term absences from the unit.

Simulation Downloads

Equipment simulations hosted in the Fort Gordon LLC support MOS sustainment and refresher training as well as just-in-time skill development. Several equipment simulations (e.g., AN/TSC-85/93, Joint Network Node, FBCB2, etc.) are hosted, which are available as downloads to registered users who have common access cards. These simulations are enabled by advanced interactive multimedia instruction technologies that use a scaffolding approach to building procedural technical skills (Frank, G., Whiteford, B., Hubal, R., Sonker, P., Perkins, K., Arnold, P., et al., 2004).

On-Demand Training

On-Demand Training, enabled by online courseware delivery, makes MOSQ, sustainment, refresher, and just-in-time training available to signal units in the field. On-Demand Training may take the form of (1) mobile training teams, which travel from the Signal Center to present tailored classroom instruction at remote locations by accessing content posted in the LLC; (2) virtual mobile training teams, which deliver special purpose instruction through the LLC to deployed units; and (3) unit universities, which enable remote, unit-based classroom instruction by accessing content posted in the LLC.

Importantly, On-Demand Training makes it possible to provide training where previously it was impossible or at least very difficult. The 24/7 availability of On-Demand Training enables Soldiers to develop critical skills independently of the institutional education cycle.

Particularly in the case of technical skills, the requirement to enhance or refresh a Soldier's capability occurs several times between scheduled educational milestones. For instance, the refresh rate for communications equipment is approximately 18 months, but the span between formal training opportunities in the schoolhouse typically is six years. In this way, On-Demand Training supports the Army's apprenticeship model of training, in which the majority of learning occurs on the job.

Modifications to LLC Logic Model Components

Few modifications to the underlying logic model components of the LLC Assessment Framework were anticipated because the logic model used to create the framework was theory-based and designed to generalize across technology-assisted educational initiatives for both civilians and the military (see Cianciolo, 2007). However, it was discovered through analysis of the Fort Gordon LLC that some refinement to the logic model and its constituent elements was necessary to represent a more complete hypothesis of cause and effect with regard to LLC impact. The main drivers of change were (1) the realization that the timeframe of impact (short-term, intermediate-term, and long-term) was unrelated to the breadth of impact (individual, unit, organization); and (2) the discovery of external factors that moderate the link between LLC outputs and the expected outcomes. The revised LLC logic model is shown below in Figure 1.

Timeframe of Impact

The Fort Gordon LLC's delivery of training outside the context of formal educational milestones (e.g., training on demand, simulation downloads), makes it possible to achieve individual outcomes during the short-term that were originally thought to occur during the intermediate-term (e.g., enhanced readiness). Outcomes thought to occur at the organizational level, over the long-term, may actually occur at the individual level (e.g., culture shift) or over the short-term (e.g., cost savings) as opportunities to provide just-in-time training arise. Given the generally limited scope of program assessments and the constantly changing nature of Army initiatives such as the Fort Gordon LLC, considering outcomes in terms of the timing of impact may draw attention to assessment

targets that are not observable or particularly meaningful.

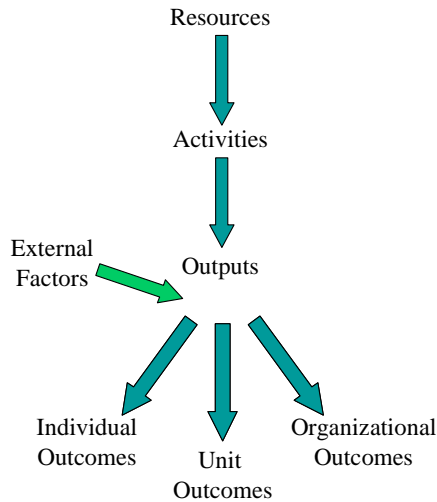


Figure 1. Revised LLC Logic Model

A more apt categorization of outcomes discriminates between individual, unit, and organizational outcomes, rather than short-term, intermediate-term, and long-term outcomes. *Individual outcomes* are those changes in learner behavior and capability accomplished via technology-assisted instruction, training on demand, and associated enhancements to instructional efficiency and effectiveness. *Unit outcomes* are those changes in unit effectiveness enabled by anytime, anywhere access to proponent learning content. *Organizational outcomes* are those changes to organizational functioning at the classroom, proponent, and Army level accomplished via lifelong learning.

External Factors

As the diversity of an LLC's educational offerings increases, and the breadth of outreach expands, the opportunity arises for external factors outside the direct sphere of influence of the LLC to play a role in achieving impact. In these cases, organizational readiness factors, which are commonly recognized to influence the effectiveness of educational initiatives (e.g., Dean, Biner, & Coenen, 1996; Salas, Rhodenizer, & Bowers, 2000; Leonard et al., 2001), become even more important determinants of success. The requirement for coordination with external actors is especially strong in a case such as the Fort Gordon LLC, where impact depends on the actions of others who do not work within the same hierarchy or reward structures.

Examples of external factors that can influence LLC effectiveness include (but are not limited to) (1) the

duration of the institutional curriculum development cycle; (2) the availability of computing facilities located on post to support blended resident instruction; (3) the incentive program for engaging in required at-home learning; and (4) Army policy regarding who can teach what qualification courses. The actors who could influence these factors range widely from unit commanders, to human resource managers, to Army-level plans and operations personnel.

External factors were not represented in the original LLC logic model because they were considered outside of the sphere of influence of the LLC initiative. However, they do play a critical role in enabling success and therefore should be recognized in an LLC assessment effort. Failure to account for external factors would prevent a comprehensive understanding at the program and Army level of how resources must be leveraged or processes enhanced to maximize impact. As an analogy, the lifelong learning concept has been considered in the present research program to be the main effort, but its success is determined by the actions of its supporting efforts. If the commander is unaware of how supporting effort activity influences the success of the main effort, he lacks the critical information he needs to ensure mission success.

Modifications to Metrics

As with the LLC logic model, relatively little modification to metrics was anticipated. Where modifications were anticipated, they were expected to involve additions to outcomes in order to reflect the unique ways in which MOS-based LLCs enhance readiness at the unit level. In fact, several metrics were added. In general, metrics were added in order to better represent the resources, activities, outputs, and outcomes associated with providing learning opportunities other than course instruction (i.e., simulation downloads and training on demand). Although the original LLC Assessment Framework accounted for the different types of learner reached by the Fort Leavenworth and Fort Gordon LLCs, the framework did not account for the diverse range of instructional methods possible. The complete set of metrics for the revised LLC Assessment Framework can be found in Cianciolo (2008).

Modifications to Measures

It was expected that modifications to measures would include (1) the addition of measurement methods that could serve as feasible alternatives to personnel surveys; (2) the modification of existing measures to make them more general across LLCs (i.e., not tied to a

specific mode of course delivery or type of curriculum); (3) the addition of measures to address the broader range of assessment opportunities enabled by the diverse outputs of different types of LLC; and (4) the addition of measures to address the creation of new metrics, where applicable. All of these anticipated modifications were made.

For instance, interviews and focus groups were added as feasible alternatives to surveys. These measurement methods provide significantly more diagnostic information than do surveys and permit approximately the same sample representativeness as surveys in certain cases (i.e., when participants are not located at the schoolhouse), given the relatively low response rate to surveys by LLC users in the field. The decision to use surveys versus focus groups should be based on the diversity and accessibility of the population to be sampled, as well as the purpose of the information (developmental or sampling) to be acquired through the research process (e.g., Wolff, Knodel, & Sittitrai, 1993).

In addition, archival materials, such as programs of instruction and course crosswalks (comparing resident to distance learning), were identified as additional measures for several metrics. Such measures draw the attention of assessors who are relatively new to the Army training system to the possibility of cost-effective, informative alternatives to novel data collection. Additional measures not explicitly mentioned in the assessment framework include previous scientific and institutional studies. The complete set of revised measures is detailed in Cianciolo (2008).

LLC SELF-ASSESSMENT

LLC self-assessment enables program management to leverage the findings of LLC assessment research in order to continually develop the lifelong learning initiative. For this reason, effort was devoted to exploring the requirements for conducting LLC self-assessment using the revised assessment framework and analyzing the feasibility of these requirements. The goal was to develop a plan for conducting LLC self-assessment that could be readily adopted and also produce meaningful data about learning effectiveness and organizational impact. Assessment lessons learned throughout the research program were collected to assist in forming this plan and may be summarized as follows:

1. The rate of change in LLC activities and outputs is very high

2. The assessment methods necessary to capture meaningful data require a “human in the loop.”
3. Face time is critical for conducting assessment.
4. Collecting readiness data requires extensive field work.

Therefore, the successful LLC self-assessment program should feature the following characteristics:

- A staff of people with working knowledge of (ideally experts in) adult learning theory and practice, educational technology, instructional design, research design, and elementary statistics to design and oversee the assessment process;
- An assessment process that involves significant face time between assessors, stakeholders, and other providers; and
- Sufficient authority and social networks to orchestrate extensive field data collection.

The program also must be resource-efficient, chiefly by leveraging existing resources, capitalizing on previous work, re-using assessment instruments, and using automation, where feasible. The LLC self-assessment program requires these features in order to (1) maintain knowledge of the rapid, frequent changes to LLC characteristics; (2) determine whether modifications to the LLC Assessment Framework are necessary to conduct assessment; (3) develop, as needed, new metrics and measures; (4) conduct data collection; (5) analyze, interpret, and disseminate findings; and (6) provide actionable recommendations for future LLC growth.

Figure 2 below shows the general layout of a proposed LLC self-assessment plan. It depicts the data and information sharing links between the key stakeholders who must coordinate to ensure the lasting success of the lifelong learning initiative. Two key aspects of this model--external assessors and the LLC staff augmentee--are discussed in detail.

External Assessors

The people ultimately responsible for conducting LLC self-assessment should be disinterested parties, independent of the lifelong learning initiative. They should not be employed by an organization whose access to funding or other resources is linked to assessment findings. Assessment personnel also should not be the same people responsible for making decisions about funding or the allocation of other resources to the LLC. Maximizing the independence of assessors in this way reduces the likelihood that biases

are used to guide the investigative “spotlight” or the interpretation of data.

In the proposed LLC self-assessment plan, external assessors are assessment specialists independent of the proponent and LLC program management who plan assessment, collect data, analyze findings, and present results. They use the LLC Assessment Framework as a basis for designing their assessment plan, as well as other resources, as necessary. External assessors may come from within the government or outside of it.

External assessors should be capable of recognizing the larger social context in which assessment takes

place. People with this ability are better able to understand (1) the concerns that stakeholders and other providers will have about being assessed; (2) the methods for building trust and exchange; (3) the organizational context that places external constraints on LLC impact; and (4) the importance of framing results in a way that is true to the findings but satisfactory to the stakeholders involved. Sensitivity to the larger social context prepares assessors to apply their assessment-related expertise in a way that will produce the most meaningful findings, accepted results, and actionable recommendations.

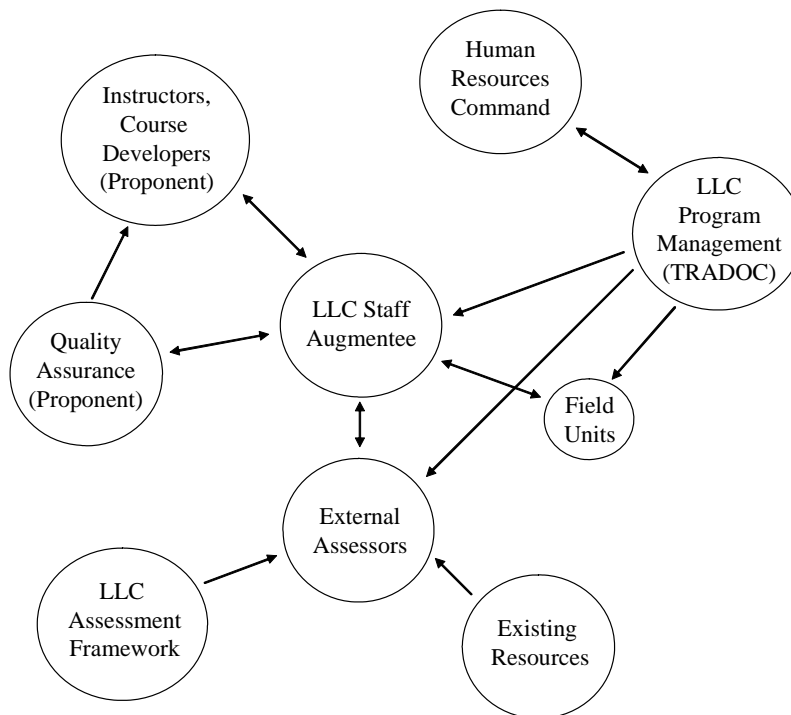


Figure 2. Schematic of the Proposed LLC Assessment Plan

LLC Staff Augmentee

The proposed LLC Staff Augmentee plays the critical role in LLC assessment by facilitating the connection between external assessors, LLC program management, proponent stakeholders, external data sources (e.g., personnel databases), and external stakeholders (i.e., field units). Like the external assessor, this person has expertise in the areas of adult learning theory, technology-assisted instruction, and educational program evaluation. The LLC Staff Augmentee is situated with the proponent, but is a government employee of the larger LLC program. This person therefore would have the expertise and access

necessary to serve as a multi-party liaison who is capable of coordinating closely with the LLC technical staff, schoolhouse faculty and course developers, subject matter experts, proponent quality assurance personnel, and field unit trainers. This person would be able to reach back to the program level of LLC management to facilitate access to external database information and field unit leadership, which will enable data collection that is external to the proponent schoolhouse. As an employee at the program level, the LLC Staff Augmentee also would be responsible for ensuring that the assessment and evolution of a particular LLC feeds the larger process, including the production of generalizable assessment methods and

the development of a shared knowledge base of LLC program effectiveness.

The knowledge and close coordination of the LLC Staff Augmentee would facilitate data collection by assisting external assessors in identifying stakeholders (inside and outside of the schoolhouse), procuring archival data, and achieving access to schoolhouse courses, field unit trainers, and personnel and training bases. The LLC Staff Augmentee also would provide external assessors with the current technical status of the LLC, as well as the history of changes, the larger organizational context, and related documentation. The implementation of assessors' recommendations would be enabled by the LLC Staff Augmentee's collaboration with proponent quality assurance personnel responsible for faculty development. The LLC Staff Augmentee would contribute his or her expertise in technology-assisted instruction to designing and delivering faculty development at the request of quality assurance.

Reconsidering the Purpose of the LLC Staff

A critical characteristic of the proposed LLC self-assessment plan is that it involves a slight, but important modification to the envisioned purpose of the LLC staff. The proposed plan is predicated on the assumption that the success of lifelong learning is as much a function of social networks as it is of technical outputs and that the LLC staff could be uniquely situated to provide both.

Currently, the role of the LLC staff is considered to be largely technical, involving the construction and maintenance of the LLC portals and the provision of technical support. In contrast, responsibility is somewhat more diffuse and less well articulated for ensuring (1) that relationships are developed with proponent stakeholders to rapidly produce effective training on demand and to conduct meaningful assessment; (2) that proponent faculty and course developers understand how to leverage technology for assisting adult learners; (3) that LLC functionality fits into the larger context of not only the proponent's objectives, but those of organizational Army; and (4) that a body of knowledge is developed to track and facilitate the growth of the lifelong learning concept.

Carrying out this responsibility requires the cooperation and coordination of a diverse set of organizations that may or may not be aware (or supportive) of their role in enabling lifelong learning. A central source of strong leadership that understands the needs of the proponent, the LLC program

management, and the larger context is needed to maximize impact.

RECOMMENDATIONS FOR FUTURE LLC ASSESSMENT RESEARCH AND PRACTICE

Future research should focus on identifying and applying the means necessary to conduct external data collection. Visits to line units actively using lifelong learning should be paid in order to observe directly the impact that anytime, anywhere instruction has on performance. Contact with these units also would enable the conduct of comprehensive interviews and focus groups to gather detailed information for developing additional outcome metrics. Physical presence with the units also would reveal additional external factors that influence the adoption of lifelong learning and potential methods for addressing these factors. The schoolhouse environment and, to some extent, the distance learning setting is fairly well understood, but the operational learning environment remains largely unexplored.

Future research also should explore and identify the additional modes of instruction and learning audiences that are being or will be addressed by current and envisioned LLCs. Although a wide sampling of educational opportunities was featured in this paper and in Cianciolo (2007), there is sufficient reason to believe that this sample was not comprehensive. This research could be conducted by reviewing each LLC's planning documentation and conducting site visits to each proponent to interview key stakeholders.

SUMMARY

The present research attempted to generalize a framework for assessing the effectiveness and impact of LLCs, a concrete instantiation of the U.S. Army's lifelong learning concept. The analysis reported in this paper included a substantial increase in the types of instruction and learning audiences supported by lifelong learning than has been conducted previously, producing a more representative sample on which to base the framework's design. It was determined that some modification to the assessment framework was necessary to address the variety of possible functions an LLC could provide. However, the logic modeling approach remained a valid method for conducting qualitative causal analysis (see Cianciolo, 2008 for an application of the revised framework to assessing the Fort Gordon LLC).

To facilitate self-sufficiency in program evaluation, an LLC self-assessment plan was developed. A key

feature of this plan is the emphasis placed on reconsidering the role of LLC staffs as having a critical social as well as technical function. Staffing in this way would facilitate the social connections necessary to conduct assessment internally and across LLCs.

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