The Process of Curriculum Innovations in the Army

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14. ABSTRACT

This report summarizes the major findings from a TRADOC-requested research project examining the implementation of the Army Learning Model (ALM) within the context of the "Shot-in-the-Arm (SITA)" project. As the ALM changes were viewed as innovations, the innovation literature was the conceptual foundation for the research. Ten Army courses were included: advanced individual training, noncommissioned officer professional development courses, and an officer basic course. Course managers, training developers, and instructors completed questionnaires and participated in focus groups. Graduates of one revised course also were tracked into their follow-on units. Courses differed in the final stage of progress from having implemented the course three times to never implementing the course, and the factors which facilitated and inhibited implementation were identified. The rate of implementation was positively affected by a quick feedback loop between training developers and instructors. The ALM concepts were viewed positively, although some ALM techniques were challenging (e.g., facilitation) and implementation was complicated by diversity of student knowledge. Key factors to sustaining changes such as instructor training also are discussed. Guidelines for curriculum developers within Army organizations are presented and stress the importance of decision-making and planning activities in which a plan to assess student performance is critical.

15. SUBJECT TERMS

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EXECUTIVE SUMMARY

Research Requirement:

    The research was in response to a request from the United States Army Training and Doctrine Command (TRADOC) to examine the implementation of ALM concepts within institutional courses and to provide guidance to TRADOC on how to facilitate such curriculum changes. ALM is a "paradigm shift" from institutional training approaches which focus heavily on instructor-led lectures. The Army Learning Concept (ALC; TRADOC Pamphlet 525-8-2) contains information about the way training was done prior to ALM and why ALM is needed. The implementation of ALM across the entire Army school system was a multi-year effort [e.g., in depth discussions with and among the Centers of Excellence (COEs), dissemination of guidance documents, further articulation and operationalization of ALM principles, site visits, special conferences, policy revisions, development of an Army Concept, mobile training teams to work with the schools] and a top priority for TRADOC during that timeframe (2012-2015). Moreover, the TRADOC G-3/5/7 understood that examining the extent of the implementation was a necessary first step in determining whether the ALC objectives were being met. To examine how the Centers and Schools were implementing the ALM, the U.S. Army Research Institute (ARI) proposed a research effort centered on adaptation of innovation concepts per ALM implementation with respect to the courses in the "Shot-in-the-Arm (SITA)" project across several Centers and Schools. The purpose was to determine which factors facilitated success during ALM SITA course revisions, whether the implementation process was working, the effects on personnel and resources, and the stage of innovation adaptation for each course.

Procedure:

    Ten courses were examined; they were selected by TRADOC from the courses which the CoEs nominated as part of TRADOC's SITA program. The courses existed at seven CoEs and Schools. They included two Advanced Individual Training courses, seven Noncommissioned Officer Education System (NCOES) courses (both Advanced Leader Courses and Senior Leader Courses), and one Officer Basic Course. A total of 72 individuals participated in the interviews/focus groups. The specific duty positions included middle managers, course managers, training developers, instructional designers, senior instructors, instructors, chief of training, unit leaders, quality assurance personnel, and Staff and Faculty personnel. In addition, graduates of one course were followed to their next duty position. Site visits started in August 2014 and were completed in March 2015.

Findings:

    The courses were divided into three stages of innovation: a *Sustain* phase where the courses had been implemented at least three times and a steady state achieved; an *Execute* phase where courses had been implemented at least once but steady state had not been achieved; and a *Plan/Develop* stage where the course had not yet been executed. Based on the Sustain courses timelines, the time required to make major changes in a course and to ensure the changes are

successful was estimated to be 1.5 to 2 years. Major facilitating factors were that participants perceived an advantage from implementing the ALM, pilots of the course or parts of a course were executed (as opposed to revising the entire course at one time) which created a positive feedback loop between training developers and instructors, and there was compatibility with some instructional techniques already being implemented.

Factors that inhibited timely development and implementation related to limited ALM training of personnel in some courses, requirements to make other course changes which were in addition to ALM, and difficulty in modifying lesson plans and course implementation to adapt effectively to individual differences in students' prior knowledge and background. That is, tailored training was of concern when the students differed substantially in prior experiences and relevant knowledge. Across all courses, training developers and instructors had greater workloads, and more preparation was required by instructors.

In general, participants reacted favorably to the ALM concepts, stressing increased student motivation, involvement and class participation. In terms of training techniques, the use of PowerPoint (a "sage on a stage") presentations was replaced by methods to facilitate learning and thinking via the instructor and/or through small groups, peer-to-peer interactions, and hands-on practical exercises. More responsibility was placed on the students with home-work and read-ahead materials as well as a change in test procedures. PowerPoint slides were greatly reduced but not necessarily eliminated. The training developers and instructors worked very hard at implementing ALM concepts and contributed to the successes that occurred.

A key factor underlying the majority of the research findings and in sustaining curriculum changes is how well instructors are trained to implement the types of techniques required by the ALM. As new instructors are assigned to courses, these instructors need to know the overall purpose of the ALM and the specific techniques, methods, and processes for implementing, sustaining, and furthering the ALM tenets within Army courses.

A *Roadmap for Success* stresses the importance of planning to include planning for performance assessment and involving all key players, monitoring course execution to include assigning an observer to the course who can provide instructor feedback directly to the training developers, and providing resources for instructor training which is critical for sustainment of the course revisions and further implementation of ALM concepts.

Utilization and Dissemination of Findings:

The results of this research were briefed to the Army Learning Coordination Council (ALCC) Working Group and the (ALCC) Principals in September 2015. Prior to these briefs, the results were provided to all of the Centers and Schools who participated in the data collection. Several of the Centers and Schools provided valuable feedback which was incorporated into the ALCC briefs. The findings of the present research are being utilized in a follow-on ARI project which is developing a tool to support curriculum developers and instructors in selecting the most effective instructional methods for their classes.

THE PROCESS OF CURRICULUM INNOVATIONS IN THE ARMY

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The Army Learning Model

In 2011 the Department of the Army's Training and Doctrine Command (TRADOC) published TRADOC Pamphlet 525-8-2, *The U.S. Army Learning Concept for 2015.* The concept describes the Army Learning Model (ALM) that meets the Army's need to develop adaptive, critical thinking Soldiers and Leaders capable of meeting the challenges of operational adaptability in an era of persistent conflict. It is a learning model that adapts to fluctuations in learning time and maximizes opportunities to master fundamental competencies. It is open to inventiveness, to input of learner knowledge, and advances in learning technologies and methods. It describes a learning continuum that meshes self-development, institutional instruction, and operational experience. This is a learner-centric continuum that begins when an individual joins the Army and ends at retirement. The learning model enhances the rigor and relevance of individual learning through assessment of 21st Century Soldier Competencies that enable success across full-spectrum operations. These nine Soldier Competencies (e.g., character and accountability, tactical and technical competence) are to be instilled and reinforced in Soldiers during their careers (see Appendix A for competency descriptions).

The ALM is the operational term for the continuous adaptive learning model just described. TRADOC Schools are incrementally implementing the ALM with changes to instructional strategies that shift from slide-based lectures to facilitated, collaborative learning events and that engage learners by employing digital learning content and relevant operational scenarios and blended learning approaches. Such shifts in instructional strategies mean a major paradigm shift in many courses. In FY13 and FY14, the Commanding General of TRADOC reinforced ALM 2015 implementation efforts by requiring each Center of Excellence (CoE) to revise at least one course program of instruction (POI) and associated lesson plans subsequent to its key personnel (e.g., course managers, training developers, instructional designers, instructors, quality assurance personnel) attending mobile training teams (MTTs) on ALM principles. This initiative was named the "Shot-In-The-Arm (SITA)" project, and each revised course was required to model ALM guiding concepts and focus on the development of the 21st Century Soldier Competencies. Although some of the CoE course revisions may have reflected technology-delivered instruction, the purpose of the research project was to identify factors which facilitated success and provide lessons learned and recommendations regarding the broader implementation of ALM.

Research Purpose

The research was in response to a request from TRADOC to examine the implementation of ALM concepts within institutional courses and to provide guidance to TRADOC on how to facilitate such curriculum changes. ALM was a "paradigm shift" from the current institutional training approaches which focused heavily on instructor-led lectures. The Army Learning Concept (TRADOC Pamphlet 525-8-2) contains information about the way training was done prior to ALM and why ALM was needed. The implementation of ALM across the entire Army school system was a multi-year effort (e.g., in depth discussions with and among the COEs, dissemination of guidance documents, further articulation and operationalization of ALM

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principles, site visits, special conferences, policy revisions, development of an Army Concept, mobile training teams to work with the schools) and top priority for TRADOC during that timeframe. Moreover, the TRADOC G-3/5/7 understood that examining the extent of the implementation was a necessary first step in determining whether the Army Learning Concept objectives were being met. To examine how the Centers and Schools were implementing the ALM, the U.S. Army Research Institute proposed a research effort centered on adaptation of innovation concepts per ALM implementation with respect to the courses in the SITA project across several Centers and Schools. The purpose was to determine which factors facilitated success during ALM SITA course revisions, whether the implementation process was working, the effects on personnel and resources, and the stage of innovation adaptation for each course.

The United States Army has a formal institutional education and training function (reference *The Army School System,* Department of the Army, 2010, TRADOC Regulation 350-18). Education and training are provided at many locations and address the requirements of Soldiers, noncommissioned officers (NCOs), and officers during their Army careers. Instructors can be military, civilian, or both. The courses vary in content, graduation requirements, student population, and length. A specific course is a reflection of a unique intersection of required tasks, skills, knowledge, and competencies in a given domain dependent on the individual's career progression. Consequently, when a substantial change to instructional approaches is proposed, the process of making those changes can vary greatly. The courses participating in the research were selected from the pool of courses nominated for SITA by the CoEs, and final selections were based on recommendations from TRADOC. Although the research was executed in the context of the ALM, the findings have general application to other large curriculum changes in the Army. The conceptual background and lessons learned presented here provide a picture of the dynamics involved with making major curriculum changes and the factors that can facilitate and inhibit that process.

Conceptual Background for the Research

Adoption of ALM concepts implies a major behavioral change for most instructors and also on how courses are developed. Adoption does not mean simply replacing a single lesson plan which is typically presented in a face-to-face situation with an on-line learning session or a computer-based session. Rather, for many courses, the ALM approach applies to the entire course, shifting from lecture–based presentations to facilitated discussions, and requires a different set of instructor skills, a different type of instructor preparation / materials / testing, etc. It often places more emphasis upon the students for being responsible for their own learning. Given this context, the ALM changes in general, and the specific changes in the SITA-designated courses were viewed as types of "innovations." Consequently, the primary framework for examining the courses was based on the "diffusion of innovations" literature (Rogers, 2003), specifically the research related to adopting innovations within organizations, summarized in Rogers' book *Diffusion of Innovations.*

Although Rogers focused primarily on innovations in society as a whole (e.g., adoption of hybrid seed corn in the 1930s-1950s, Toshiba's creation of the laptop computer in the 1980s, adoption of the internet from 1970 to 2002, and the failure to adopt the Dvorak keyboard in the 1930s), he also examined the innovation process within organizations. These concepts have

direct application to the Army's institutional training framework. Within an organization, the innovation decision is often made by a person in authority (e.g., adoption of communication technologies by banks or of medical technologies by hospitals) as opposed to being an optional decision to try an innovation by an individual (e.g., deciding to buy a cellular telephone). Rogers called such decisions "authority innovation-decisions." With such decisions, employees of an organization must comply. Rogers also indicated that once a decision is made to adopt, implementation may not automatically follow, and the innovation process within organizations can be complex. Furthermore, the organizational structures can vary, resulting in differences in the authority structure and formal policies/procedures. Rogers noted that informal processes and practices within organizations also influence the adoption process. For the present research, the expectation was that the innovation process would likely differ among the Army Schools / CoEs, given the different organizational structures across the CoEs, differences in internal processes and practices, and differences in course objectives and student populations.

Stages of Innovation

Rogers' five stages of innovation are described briefly in Table 1 below. The cross-walk between these five stages and the integration of the ALM into Army courses is also shown.

Table 1
Rogers' Stages of Innovation and Their Application to Innovations in Army Courses

Rogers' Stages of Innovation	Relationship to ALM Integration
Agenda Setting: Problem defined which identifies a need to change, and search initiated to identify innovations that would be useful solutions to the problem	**Decision-making – Course Selection:** Who, when and why the course was selected for TRADOC's SITA effort; identification of training gaps; lines of communication between subordinate units at this stage
Matching: Match the problem to appropriate solution, examine feasibility of solution, and anticipate benefits and problems to be encountered when implemented	**Planning and Identifying Solutions:** Determining how to best implement ALM concepts in the course; how to best address training gaps; proposed solutions; complexity of the problem to be addressed.
Redefining/structuring: Redefine innovation to meet organization's needs and structure	**Developing Course Revisions:** Actual development of course revisions; complexity of revisions; interactions between training developers and instructors; resources needed and available. Re-invention may occur here.

Clarifying:	**Implementing/Executing the Revised Course:**
Innovation now put into widespread use, new idea clearer to users, misunderstandings clarified, and common understandings achieved	Instructors execute the revised course; how revisions affect the instructors; coordination between instructors and training developers to revise course as necessary; execution success and issues.
Routinizing:	**Sustaining the Revised Course:**
Innovation now incorporated into regular activities of the organization. Critical issue is whether it will be sustained.	Course revisions stabilized, reached a steady state; decision-makers, training developers and instructors satisfied with changes and adequacy of implementation. Sustainment plans if sustainment not yet achieved.

Rate of Adoption of Innovations

The research on diffusion of innovations also identifies factors that facilitate and inhibit changes in organizations. Rogers (2003) cited five major characteristics of an innovation that impact the rate of its adoption. These are cited in Table 2 but not in order of their importance or relative impact. All factors, except complexity, relate positively to the rate of adoption.

Table 2
Rogers' Five Major Characteristics that Impact the Rate of Adoption of Innovations

Rate of Adoption Factor	Relationship to ALM Integration
Relative Advantage: The degree to which an innovation is perceived as better than the idea it supersedes. The important point is that the innovation is perceived as better, not that it has necessarily been shown to be better. "Better" may mean savings of time and effort, economic profits, low cost, etc.	Relative advantage could be reflected in the extent to which course managers, training developers and/or instructors perceived an advantage in modifying the mode of instruction, e.g., student skills / knowledge gained, ability of students to think, understand and retain subject matter; advantages of greater student responsibility.
Compatibility: The degree to which the innovation is similar to, overlaps with, or is consistent with adopters' existing values, past experiences, needs, and/or existing norms.	Compatibility could be reflected in the extent to which training developers and instructors perceived ALM techniques/approaches as consistent with changes they thought were needed (e.g., to address a training gap), were consistent with changes they were considering, or consistent with similar changes made in other courses.

Trialability:	
The extent to which an innovation can be experimented with on a limited basis. Can it be tried out? Trialability exposes users to the innovation on a gradual basis and therefore presents less uncertainty to individuals who must use the innovation.	Revised courses or parts of the courses could be tried out relatively early in the development process to determine whether the revisions were satisfactory. In other words, pilots could be conducted.
Observability:	
The extent to which the results of implementing the innovation are visible to others, the more likely individuals are to adopt. Observability removes doubts regarding whether the innovation works.	Courses could be observed or monitored (e.g., instructor implementation of ALM and student behaviors/reactions). The question was whether this actually would occur in the curriculum development process.
Complexity:	Complexity could be reflected in the difficulty instructors had in switching from lecturing to facilitating discussions. Training developers could have difficulty incorporating good problem-solving or thinking exercises.
The difficulty individuals have with understanding and using the innovation. The more complex the innovation, then the slower the rate of adoption.	

Rogers cited three other factors which were perceived as directly relevant to the ALM effort. These are summarized in Table 3.

Table 3

Additional Factors that Can Impact the Rate of Adoption of Innovations

Additional Factors	Relationship to ALM Integration
Reinvention:	
The degree to which an innovation is changed or modified by a user in the process of adoption and implementation. Many innovations are re-invented as adopters implement them in a variety of ways, thus changing the innovation during the diffusion process. An innovation diffuses more rapidly when it can be re-invented and that adoption is more likely to be sustained.	Given that ALM concepts are relatively broad and not entirely prescriptive, ALM could be defined and applied in different ways by the Centers and Schools, depending on their particular circumstances. Schools could also feel enabled to change or re-invent with time and experience with the course.
Coordination between units:	
The degree of interconnectedness, coordination, or interactions between individuals and /or units within an organization influences the rate of adoption. New ideas can be disseminated more quickly and easily to the degree that interconnectedness exists. Also when an organization can apply additional resources to an innovation, then adoption occurs more readily.	As the CoEs have different organizational structures, both the formal and informal paths of communication among the key training personnel could differ and could have different impacts upon the innovation process.

Champion:
A champion is an individual who fully supports the innovation and tries to overcome resistance to it within the institution. Having a champion facilitates the success of an innovation. Champions do not need to be powerful individuals. They are often middle managers; individuals who are adept at working with others and skilled in negotiating and persuading. A champion focuses on the innovation at the start and continues to be involved to ensure successful implementation.

Champions of the ALM implementation could be any of the individuals involved in the SITA effort such as unit leaders, course managers, training developers, and/or instructors.

Research Objectives

The first objective was to determine the stage of innovation for each course, determine which factors facilitated success with the ALM course modifications, determine which factors restrained success, and provide lessons learned / recommendations regarding changes in other courses. The factors which facilitated and inhibited success were based on Rogers' model (see Tables 1, 2, and 3).

The second objective was to develop a framework for gathering evidence on ALM implementation to enable decision-makers to determine whether an implementation process worked, the impact of the change process on personnel involved with the implementation (e.g., instructors, training developers, students), and major resources required. Guidelines to assist decision-makers in assessing the progress, in facilitating changes, and in documenting benefits of the changes also were to be included in the framework.

The third objective was to document the substantive changes in the courses from the perspective of ALM concepts and principles. This objective included determining changes in instructional delivery methods (e.g., technology) and/or in major training approaches, and identifying which 21st Century Soldier Competencies were reflected in the approaches taken.

Lastly, a unique feature of the research was that the graduates from one of the courses in the effort were followed to their next duty station to gain insights regarding the impact of the revised course on their performance in the field. Comparisons were made with individuals who had graduated prior to the revised course. In this report, the general lessons regarding implementation of ALM concepts/principles and research methodology are presented. Results unique to the course are not cited.

Method

The ten courses examined for the present research were selected by TRADOC from the courses which the CoEs nominated as part of TRADOC's SITA program. The courses existed at seven CoEs and Schools. The ten courses included two Advanced Individual Training courses, seven NCO professional development courses (both Advanced Leader Courses and Senior Leader Courses), and one Officer Basic Course.

Participants

A total of 72 individuals participated in the interviews/focus groups. The specific duty positions included middle managers, course managers, training developers, instructional designers, senior instructors, instructors, chief of training, unit leaders, quality assurance personnel, and Staff and Faculty personnel. Middle managers were individuals who monitored several course managers; this position did not exist at all Schools.

A background survey (see Appendix B) was completed by 63% ($n = 45$) of the participants, who then completed a questionnaire appropriate to their roles and responsibilities in the innovation process and/or were interviewed about their roles and responsibilities. The planning questionnaire was completed by ten individuals. The developing revisions questionnaire was completed by 23 individuals.

Site visits started in August 2014 and were completed in March 2015. There was one major limitation of the effort. The surveys and interviews were conducted at a point in time when some key individuals in the planning or development process had left their positions. Thus, relevant input regarding some stages (e.g., planning and development start dates) had to be obtained from individuals who were less knowledgeable because they were not in the current position during the decision-making processes for the selection of a course for the SITA effort and/or not involved in the planning processes for the revisions. The extent to which this occurred varied with the course.

Questionnaires and Interviews

Background information. The background questionnaire (see Appendix B) asked participants to indicate their duty position and their time in this position, and to indicate the SITA training they had attended. They were also asked about the extent of their role in each of the five stages of innovation, the timing of each stage (if known), and to select the best description of the status of that stage. Figure 1 illustrates the type of scale used to describe the status of a stage (e.g., Stage 4). Similar three-category rating scales were used to determine the degree of progress for each of the other stages. Lastly participants indicated their interaction and communication with individuals in other key duty positions during the course revisions and implementation processes. Interview questions which supplemented the questionnaire were also developed (see Appendix B). The implementation timelines were established from pooling the questionnaire and interview data.

CHANGE ACTIVITIES

Circle the cells that best describe the implementation/ execution stage.

Implement change or course revisions. Execute course revisions	Have not yet implemented the revised course.	Have completed one iteration of the revised course.	Have completed more than one iteration of the revised course
If implemented, modify course from feedback. Collect obtain feedback from instructors and/or students and further revise the course.	Have not collected feedback regarding the course revisions	Have collected course feeback, but have not made additional revisions to the course	Have collected course feedback and have made additional revisions to the course.

Figure 1. Illustration of rating scales in the background questionnaire (status of the Execution stage – Stage 4)

Stages of innovation questions. It was acknowledged that there could be overlap among the innovation stages. We also expected that individuals interviewed would have different roles in each stage and would not necessarily have a role in every stage. Even though each individual was asked about his/her role, more extensive surveys and interviews were conducted with individuals with primary roles during a specific stage. If an individual indicated that he or she did not have a role in a specific phase, then they did not address that phase.

Interview protocols were developed for each stage. Questionnaires were developed for only Stages 2 and 3 (Planning and Developing). All instruments are in Appendix B. An overview of the questions is in Table 4.

Table 4
Primary Questions About Each Innovation Stage

Stage	Primary Questions / Topics
Decision-making	Who made the decision to select the course for SITA How many courses were considered Primary reason for selection

Planning & Identifying Solutions	Plans made for the change
	Seven dimensions to estimate the nature of change
	    Degree of change
	    Difficulty of making the changes
	    Changes in instructor behavior/procedures
	    Time requirements
	    Manpower requirements
	    Workload
	    Costs
	Questions on instructional techniques and Soldier competencies

Developing Course Revisions	Coordination between planners and training developers Where most of the changes were made (e.g., instructional delivery, problem-solving exercises, tailored training) Actual degree of change on the same seven dimensions asked of the planning stage Questions on instructional delivery, manpower and time requirements
Implementing/ Executing the Revised Course	Instructor experience with the revised course and the legacy course Interactions with training developers Instructor preparation for the revised course Changes in instructor behavior with students, changes in workload Maintenance of instructor expertise
Sustaining the Revised Course	Plans for preparation/training of instructors; how to maintain expertise Obtaining student reactions to course and indices of student performance Lessons learned from courses that had been executed several times

As indicated in Table 4, seven dimensions were used in both the planning and developing questions to determine the nature of the changes from the legacy to the revised course. For each dimension, a specific scale was developed. The rating scales for three of these dimensions are shown in Figure 2. All rating scales are in Appendix B.

DIMENSION

Circle the cell that best describes each dimension.

Degree of change →

| Minor course revisions: slight adjustments to the current lesson plans | Moderate course revisions: Additions or revisions of student exercises, slight changes to instructor training, etc. | Large-scale course revisions: Re-write of the POI and lesson plans, extensive instructor |

Difficulty of making the changes/course revisions →

| Simple tasks to make changes/course revisions (e.g., low fidelity, no content change) | Moderately difficult tasks to make changes/course revisions (e.g., changes to current content, changes to existing software) | Extremely difficult / very complex to make changes/course revisions (e.g., new software development, all new content/lesson plans. |

Change in instructor behavior/ procedures →

| Minor and few changes needed in instructional techniques from the prior course; no new instructor training (e.g., removal of PowerPoint slides, more repetition of exercises to enhance learning and retention) | Somewhat difficult for the instructor. Most desired changes built upon instructional techniques previously used. Instructor training needed for some blocks of instruction (e.g., desk-top simulations or computer-based training to virtual simulations, insertion of more complex problem-solving exercises) | Substantial changes in instructional techniques; training required to prepare instructors for most of the course (e.g., high direct instruction to primarily facilitator, focus on technical skills only to also focusing on decision-making) |

Figure 2. Scales used to rate three dimensions on the nature of course changes (Planning - Stage 2)

The interview / questionnaire process. During the interviews, one individual asked questions while another took notes. Both individuals then reviewed the notes for completeness and clarity. The interviews were used to verify timeline information and other information obtained from the background questionnaire.

A codebook (Appendix C) was developed for coding the interview records. Two individuals coded each interview. In many instances, a given comment could legitimately be placed in more than one category. Any direct contradictions in the codes were resolved between the two coders. The major categories in the codebook were:

- Shot-in the-Arm initiative
- Course selection
- Role of key personnel
- Instructors
- Knowledge of ALM
- Communication between stakeholders
- Rate of adoption factors
- 21st century Soldier competencies
- Types of revisions
- Training development capability
- Outcomes

For each major category, there were subcategories. These subcategories were particularly critical in coding the rate of adoption factors.   For example, the complexity factor was examined in terms of the general increase in workload to make the changes (did all course lessons have to be changed or only some of the lessons), degree of difficulty in making exercises consistent with ALM goals, changes in the types of tests administered, and additional complexities because of unexpected changes in subject matter content.

Follow-on of Course Graduates

Graduates of one revised course were followed to their duty station. These graduates were interviewed, as well as their leaders and graduates who had received the "legacy" course. Questions focused on their reactions to the course and the applicability of what they learned to their current duty positions (e.g., what were the most valuable parts of the course, where could improvements be made, time required to assume their duties). Similar questions were asked of the graduates of the "legacy" course. Leaders were asked whether they perceived differences in the skills, expertise, professionalism, and leadership qualities of the two groups of graduates. The interview protocol is not provided in this report to prevent disclosure of the course which was investigated.

Results

The results are presented by the stage of innovation of each course when the questionnaires and interviews were conducted, rather than by the total sample. The courses were divided into three stages based on Rogers' framework:

- **Sustain**: The courses had been executed at least three times and those interviewed felt a steady state had been reached; three courses were in this category.

- **Execute**: The courses had been executed at least once, but changes were still in progress; four courses were in this category.

- **Plan/Dev**: The courses had not been executed. Typically development was not complete and/or no course had yet been piloted/implemented; three courses were in this category.

More detail on these course stages is in the section on timelines.

Participants and Courses

The numbers of participants by duty position and innovation stage are shown in Table 5.

Table 5
Number of Participants Interviewed by Duty Position and Innovation Stage

Innovation Stage	Duty Position		
	Middle / Course Manager / Training Developer / Instructional Designer	Instructors / Sr Instructors / Chief of Training / Unit Leader	Quality Assurance / Staff & Faculty
Sustain ($n = 26$)	10	8	8
Execute ($n = 28$)	8	11	9
Plan/Dev ($n = 18$)	5	7	6
Total ($N = 72$)	23	26	23

Questions were asked about the SITA/ALM training which was sponsored by TRADOC. Table 6 presents the numbers of individuals who attended at least one SITA course and those who did not attend any course or for whom no data were available. For course managers, training developers and instructors, the primary individuals responsible for the course changes, the percentage of SITA attendance was highest for courses in the *Execute* stage, then *Sustain*, and lastly *Plan/Dev*. The low percentages of individuals in the *Plan/Dev* stage who received SITA training may have inhibited their ability to execute change.

Table 6
SITA Attendance by Innovation Stage and Duty Position

Innovation Stage	N of Individuals	Attended SITA n (%)	Not Attended SITA or Not Asked n (%)
	Training Developers / Course Manager / Instructors		
Sustain	18	10 (56%)	8 (44%)
Execute	19	16 (84%)	3 (16%)
Plan/Dev	12	4 (33%)	8 (67%)
Total	49	30 (61%)	19 (39%)
	Staff and Faculty, and Quality Assurance		
Sustain	8	7 (87%)	1 (13%)
Execute	9	4 (45%)	5 (55%)
Plan/Dev	6	4 (67%)	2 (33%)
Total	23	15 (65%)	8 (35%)
	All Participants		
Sustain	26	17 (65%)	9 (35%)
Execute	28	20 (71%)	8 (29%)
Plan/Dev	18	8 (44%)	10 (56%)
Total	72	45 (63%)	27 (37%)

Note. Percentages based on the number of individuals in each innovation stage. SITA attendance based on attendance in at least one SITA course. Individuals who attended more than one course were counted only once.

Timelines

The cumulative time to make changes to a course and to implement it was used to document the rate at which an innovation was adopted. However, due to the turnover in personnel from the start of the SITA effort to the time individuals were interviewed, in some courses there were information gaps. Thus, this section of the report simply summarizes the timelines by course status. It is noted that timelines can vary because of course length, e.g., pilots or iterations of a course are faster with short courses or with a pilot which involves only a section of a course. Time was also somewhat dependent on the dates when the interviews were collected over the August 2014 to March 2015 research period.

For each course, the start point was when planning began and the end point was when the data were collected. Planning efforts typically started three to six months after the course decision was made, although in some instances the exact decision date was not known to those who were interviewed. In general, planning started around May 2013 with the bulk of the interviews completed by the end of November 2014, a period of 20 months. Consequently, the timelines were typically based on a 20-month window (there were exceptions, as some courses started planning earlier and/or were interviewed later).

Table 7 summarizes the status of the courses by innovation stage and the time required to progress to their respective stages. The total times for courses in the *Sustain* and *Execute* stages were very similar, but courses in the *Execute* stage had not progressed as far as those in the *Sustain* stage. Delays occurred for each course in the *Execute* stage. These delays meant that the first implementation or pilot for courses in the *Execute* stage was 6 to 12 months later than what occurred with courses in the *Sustain* stage. For the three courses in the *Plan/Dev* stage, none had been executed as desired, with the timelines ranging from 12 to 21 months.

Based on the Sustain courses timelines, the time required from the initial decision to make course changes and ensure the changes are working would be 1.5 to 2 years. This time could be shorter if no external factors influenced the process and manpower was satisfactory.

Table 7
Cumulative Time From Start of Planning to Course Status When Data Were Collected

Innovation Stage	Description of Course Status	Time in months	Reasons for Delays
Sustain	– All three courses were implemented at least three times. – Personnel indicated that no major changes envisioned; had achieved a steady state.	11 to 17	
Execute	– Two courses were implemented twice. – Two courses were implemented once. – Changes were ongoing for each course.	10 to 16	Substantial doctrinal changes required before ALM concepts could be incorporated, first pilot indicated the approach did not work and revisions were required, and/or a formal decision to stagger the implementation of ALM concepts in courses of interest.
Plan/Dev	– No course had been implemented.	12 to 21	Training developer overload which prevented the training development work from being completed, a major restructure of the sequence of the course which delayed implementation of ALM, and/or formal decision to stagger the implementation of ALM.

Perceived Status of Decision-making, Planning, and Developing Stages

       Background questionnaire. Table 8 indicates the progress made in the different course categories regarding planning and development. The responses to these specific items on the background questionnaire reflect the overall differences in progress among the courses in the three innovation stages.

Table 8
Percentage of Individuals Responding to Background Questions on Progress of Major Revisions (most frequent response for each innovation stage is in boldface)

Topic	Rating Scale	Innovation Stage		
		Sustain	Execute	Plan/Dev
Identify	Not identified	---	12%	12%
Revisions	Somewhat identified & agreed upon	---	**63%**	**63%**
	Fully identified & agreed upon	**100%**	25%	25%
	Total number of respondents	6	8	8
Identify	Not agreed upon	---	24%	---
Solutions	Somewhat agreed upon	---	**38%**	**86%**
	Fully agreed upon	**100%**	**38%**	14%
	Total number of respondents	6	8	7
Develop	Not developed	---	33%	**83%**
Course	Draft materials	17%	11%	17%
Materials	Finalized materials	**83%**	**55%**	---
	Total number of respondents	6	9	6
Develop	Not developed	33%	33%	40%
Instructor	Draft materials	--	22%	**60%**
Training	Fully developed & applied	**67%**	**44%**	---
Materials	Total number of respondents	3[a]	9	5

[a] One individual's response to this question was ambiguous and not included in the final tally. Due to the small number of responses, it is difficult to draw conclusions regarding this topic for all courses in the Sustain stage.
Note. Number of respondents to each topic corresponds to the number of individuals who had sufficient knowledge to answer the questions. If the respondents were unaware of the process, they were told not to answer the question. A total of 45 individuals responded to the background questionnaire, but not all answered the questions referenced in this table.

       In summary, the ratings for the *Sustain* courses were distinct when compared to courses in the *Execute* and *Plan/Dev* stages, in that the *Sustain* ratings consistently indicated the greatest progress in identifying revisions, identifying solutions and developing course materials (also see Appendix D). Of note is that instructor materials had ratings of not fully developed for every course stage. Lastly, no participant indicated that the candidate course for the SITA effort was hard to identify.

Planning and development questionnaires. The answers to the planning questionnaire reflected the planners' expectations, while the answers to the development questionnaire reflected what training developers actually experienced. Tabulation of the ratings given to the common set of seven change dimensions in the planning and development questionnaires is in Table 9; complete data are in Appendix D.

Trends from the planning results. There were no major distinctions among course stages regarding expected changes.
- Major changes were typically expected, e.g., re-write of the program of instruction and lesson plans plus extensive instructor training, and no one expected making the changes to be "simple."
- Difficulty of change was rated as moderate or extremely difficult
- Changes in instructor behavior were viewed as somewhat difficult
- Time required was anticipated as being extreme
- Changes were expected to be done with current personnel
- Moderate increase in workload was expected
- Costs were anticipated to be inexpensive or somewhat costly.

Development results. Three major trends occurred in the ratings.
- Compared to the planning estimates, the training developers' responses were more varied. This greater spread reflected in part the unique characteristics and dynamics of each course in a given stage.
- The number of change dimensions with the most challenging rating varied systematically with course stage. *Sustain* courses had the fewest challenging ratings (2 of 7), followed by *Plan/Dev* courses (4 of 7), with *Execute* courses having the most challenging ratings (6 of 7). Also the ratings were most diverse for the courses in the *Execute* phase, which could reflect the larger number of courses in this phase.
- Overall, the development responses for the *Sustain* courses reflected minor to moderate perceived changes in time required, manpower required, workload, and costs. In contrast, responses for the *Execute and Plan/Dev* courses indicated more time required and greater workload. These ratings were also reflected in the interviews.

Other trends. Not all changes were judged as "large-scale" during development, although "large scale" changes were anticipated for all courses in the planning stage. Training developers agreed with the planning estimates as the changes were not judged as "simple" to accomplish. Ratings for changes in instructor behavior were diverse for courses in the *Sustain* stage, and less variable in the other two stages. Some additional manpower was required in some *Sustain* and *Execute* courses; no additional manpower was used for the *Plan/Dev* courses. These responses agree with the manpower numbers presented in the next section. Lastly, there were no costs associated with new or revised training technologies in any of the courses. The costs cited for the *Execute* courses reflect personnel costs associated with contractor support to the CoE.

Table 9

Percentage of Individuals Responding to Questions on Change Dimensions: Planning and Development Stages (most frequent response is in boldface)

Change Dimension	Rating Scale	Planning Questionnaire	Development Questionnaire		
		All Courses (*n* = 10)	Sustain (*n* = 7)	Execute (*n* = 10)	Plan/Dev (*n* = 6)
Degree of Change	Minor	---	---	30%	17%
	Moderate	20%	**57%**	20%	**50%**
	Large-scale	**80%**	43%	**50%**	33%
Difficulty of Change	Simple	---	14%	20%	17%
	Moderate	**50%**	**72%**	**50%**	33%
	Extremely difficult	**50%**	14%	30%	**50%**
Changes in Instructor Behavior	Minor	---	**43%**	20%	17%
	Somewhat difficult	**70%**	28%	**40%**	**66%**
	Substantial	30%	28%	30%	17%
Time Required	No additional	---	---	20%	---
	Moderate	20%	**71%**	20%	**50%**
	Extreme	**80%**	29%	**60%**	**50%**
Manpower Required	Current personnel	**50%**	29%	30%	**67%**
	Some additional	20%	**71%**	30%	---
	Much additional	30%	---	**40%**	33%
Workload	The same	10%	29%	10%	17%
	Moderate increase	**70%**	**71%**	**50%**	17%
	Substantial increase	20%	---	**50%**	**66%**
Costs	Inexpensive	**40%**	**100%**	20%	**66%**
	Somewhat costly	30%	---	30%	33%
	Very costly	10%	---	**50%**	---

Notes. For the planning questionnaire, all courses are grouped together because of the consistency in responses and the limited number of responses. .

Manpower Required

The data on the typical number of training developers required to develop the materials was extremely limited. Responses were available for only six of the ten courses. Considering all six courses, participants indicated there were either one or two full-time training developers. For five of the six courses (only *Execute* and *Sustain*), part-time training developers were available.

Factors that Affected the Rate of Change and Extent of Adoption of the ALM

This section presents results on the major factors that affected the adoption of the ALM. This includes Rogers' characteristics as well as other factors. The major factors that impacted the rate of change for courses in each of the innovation stages is shown in Figure 3. Facilitating factors are preceded by a plus (+) sign; inhibiting factors are preceded by a minus (-) sign.

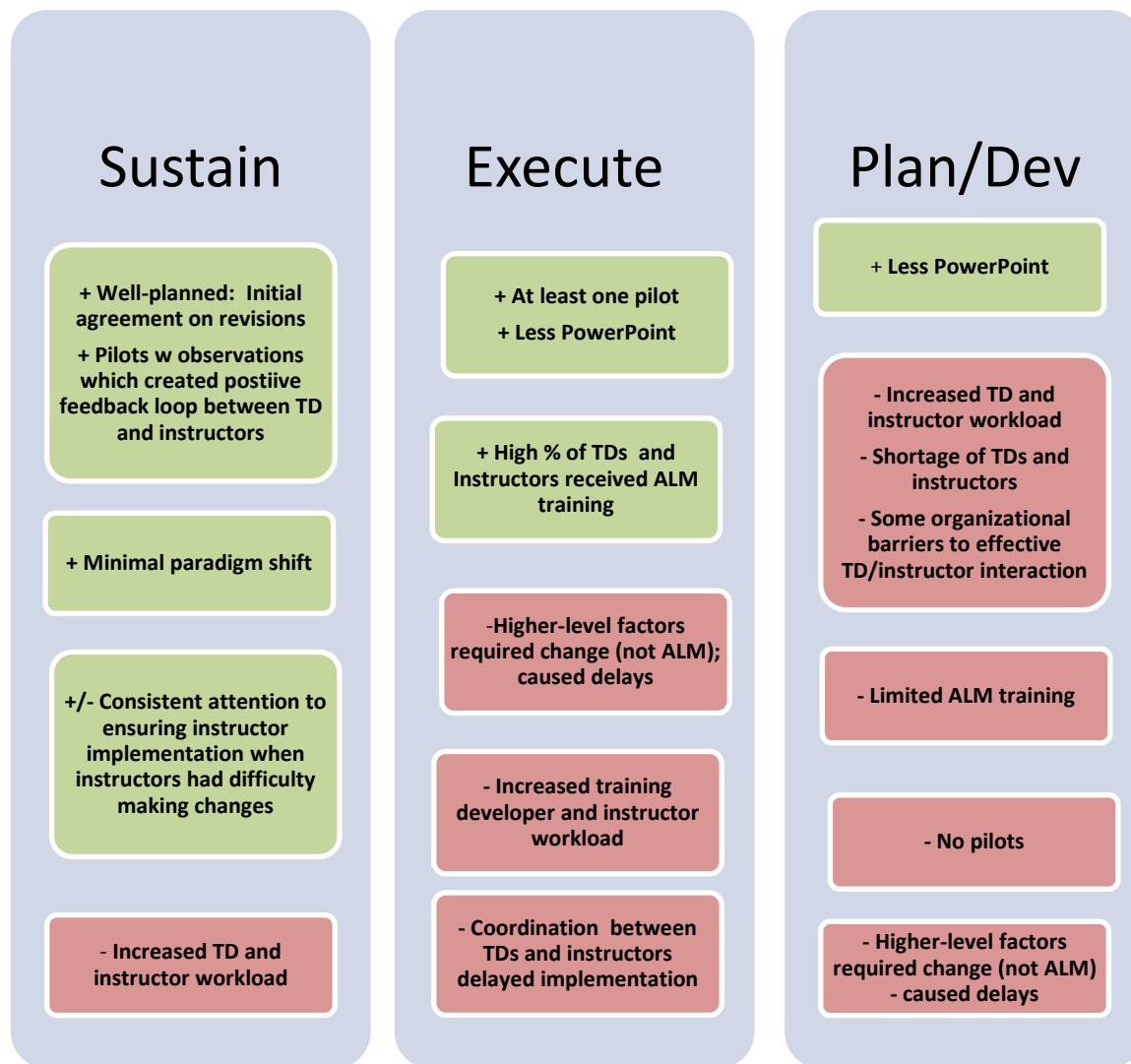| Sustain	Execute	Plan/Dev
+ Well-planned: Initial agreement on revisions	+ At least one pilot	+ Less PowerPoint
+ Pilots w observations which created postiive feedback loop between TD and instructors	+ Less PowerPoint	
+ Minimal paradigm shift	+ High % of TDs and Instructors received ALM training	- Increased TD and instructor workload
		- Shortage of TDs and instructors
+/- Consistent attention to ensuring instructor implementation when instructors had difficulty making changes	-Higher-level factors required change (not ALM); caused delays	- Some organizational barriers to effective TD/instructor interaction
		- Limited ALM training
	- Increased training developer and instructor workload	- No pilots
- Increased TD and instructor workload	- Coordination between TDs and instructors delayed implementation	- Higher-level factors required change (not ALM) - caused delays

Figure 3. Major factors that impacted the rate of change for courses in each innovation stage. ("TD" stands for "training developer.")

The major trends and themes across the courses and innovation stages are presented in the following order:

- Instructor knowledge and understanding of ALM
- Interactions among key groups of personnel
- Personnel issues, primarily turbulence and shortages
- Course champion
- Roger's rate of adoption characteristics

Instructor knowledge and understanding of ALM. Most comments on instructors came from participants in the *Sustain* and *Execute* stages, as these courses had actually been executed. Four themes emerged regarding how instructors influence the innovation process.

Theme one. Extent to which instructors knew or needed to know what ALM meant. Not all instructors had attended ALM classes, and not all felt that the instruction received was sufficient. A trend in the data indicated that a large portion of instructors did not know the intent or purpose of ALM. Responses from both instructors and training developers indicated a need for instructors to receive much more instruction on what ALM is, how to implement ALM, and how to develop instructional materials to execute ALM. It was felt that this instructor training should be similar to what training developers receive and should be executed prior to teaching the course.

Theme two. Degree to which instructors could actually implement ALM concepts/ principles / techniques, primarily being able to facilitate discussions and implement a learner-centric instructional approach. To actually implement and execute ALM, the participants indicated that more than knowledge of ALM was needed. An instructor must also be a subject matter expert; must prepare for what is not in the lesson plan in order to answer student questions; and must establish an open-line of communication with students. The ability to facilitate seemed particularly challenging as indicated by comments regarding the difficulty in changing to a facilitation and learner-center mode for instructors who had been instructors for a long time. Some instructors were reported as reverting back to the legacy style and in need of constant reminding to be a facilitator and learner-centered. For courses that had several iterations, respondents commented that instructors became more proficient with time, but it was often difficult for instructors to give up control and function as a facilitator.

Theme three. Subject matter expertise. Some comments stressed that instructors must be extremely knowledgeable regarding technical content to be facilitators and good mentors. They needed to know material beyond the scope of the course content per se in order to address student questions. In addition to ALM training, some instructors indicated they will continue the policy of having new instructors shadow courses or pairing new instructors with current instructors (right-seat-ride), and certifying them prior to allowing them teach independently.

Theme four. Concern about sustaining instructor expertise. This concern was cited primarily by individuals associated with courses with military instructors where instructor

turnover was high (e.g., every 18 months). Train-up time could be long, and once instructors become proficient in their role, it was time for them to leave. The issues raised in the current effort regarding instructor expertise in ALM could be exacerbated in the future when there may be less focus on ALM concepts per se, resulting in a degradation in the knowledge of ALM and techniques necessary to enable instructors to implement these concepts with skill and understanding.

Interactions among key units/groups. The nature and timing of the interactions and lines of communication between key personnel and units also emerged as critical to ALM implementation. Three themes emerged.

Theme one. Criticality of coordination between training developers and instructors and to establish such coordination early in the innovation process. This was a major issue. For example, the important of coordination was stressed in one course in the *Sustain* stage because it was hard to get the instructors and the training developers at the same level of understanding. This was complicated by the fact that instructors had varying levels of expertise and/or that some were civilian and others were military. The initial lack of coordination between training developers and instructors delayed the process, but with repetitions of the course instructors eventually understood the training developers' intent. The general consensus was that if the two groups had collaborated initially, the process would have been much smoother.

Theme two. Coordination among all key players. The broader issue of coordination was reflected in comments by some participants in the *Execute* stage. Instructors in one course thought the decision-making process should have been different. Specifically, they said the first step should have been ALM training for everyone (e.g., instructors, training developers, course managers), then course selection, then everyone should plan, and finally the training developers and instructors should work together on changes. That would have reduced the disconnects and misunderstandings, which happened when the information was simply handed over to the instructors.

Theme three. Establishing communication when key players are under different lines of authority. Coordination problems were stressed in one course in the *Plan/Dev* stage, where the lines of authority for instructors and training developers differed. This inhibited interactions and communication/coordination between these two groups of personnel, which in turn inhibited appropriate and timely development of the revised lessons. Coordination was also delayed for a course in the *Sustain* stage, where the training developers and instructors were under different commands.

Patterns of interactions. Who actually interacted with each other? One question on the background questionnaire asked participants to indicate their primary interactions between themselves and other units and whether the interaction was two-way or one-way. The results presented here are only for the four major groups involved in the actual course conversion process: course managers, training developers, instructors, and directors/commanders. These interactions are shown in Figure 4 and summarized after the figure.

The 3 Sustain Courses
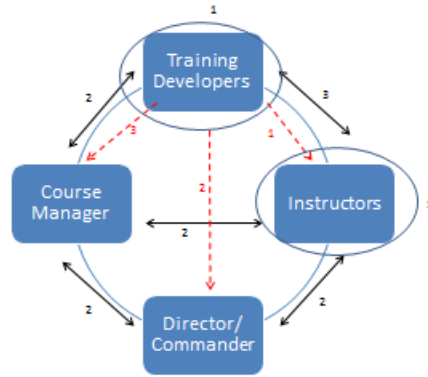
- Solid two-headed arrow indicates two-way interaction
- Dashed one-headed arrow indicates one-way interaction
- Circle represents interaction within a group
- # represents number of courses which had a specific form of interaction

The 4 Execute Courses
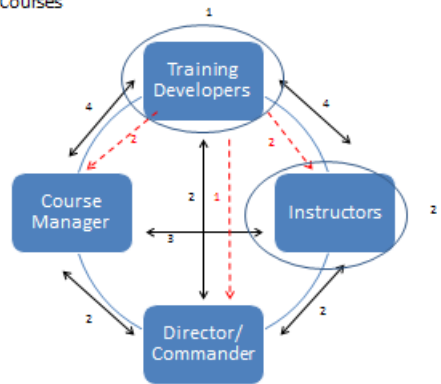
The 3 Dev/Plan Courses

Figure 4. Interactions between key groups of personnel.

Figure 2. Interactions between training developers and instructors. Two-way interactions existed between training developers and instructors for each course except one in the *Plan/Dev* stage, where training developers interacted with instructors but not vice versa. However, some training developers and some instructors indicated their primary interactions were within their own group. It is noted that one reason for the circle around instructors (indicating primary interactions within this group) came from courses where the instructors were also the course writers.

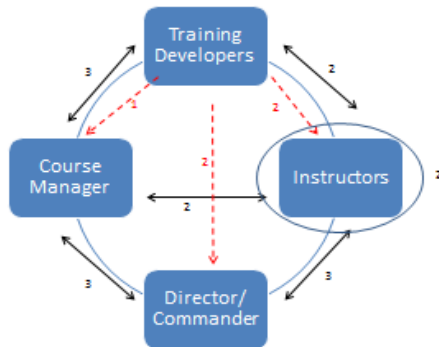*Figure 2. Interactions between training developers and course managers.* This link is probably a function of the organizational structure within most CoEs. Training developers and course managers typically had two-way-interactions. When one-way interactions occurred, they reflected training developers initiating interactions with other groups. Also training developers typically initiated interactions with the director or commander.

There are limitations to these interaction data. First, is that although participants were asked to focus on primary interactions, it is likely that many simply indicated if they interacted with another group. Second, these results do not indicate changes over time, which were often described by participants when they were interviewed. Third, generalizations beyond this sample regarding typical interactions for courses at different stages of innovation are limited due to the small sample size.

Personnel issues. Most personnel issues focused on turbulence, longevity, shortages, and instructor selection.

Primary theme. Personnel turbulence, longevity, and shortages interacted with each other to delay the innovation process. Instructor turbulence and shortages occurred in *all course stages*. In one case in the *Sustain* stage, participants indicated some instructors in the initial pilot were already gone, which impacted sustainment of the changes. Participants in the *Plan/Dev* stage indicated there was often insufficient time or training to adequately prepare instructors. Overall, the general response by participants was that these factors meant that instructor preparation must continue. Turbulence in other positions also inhibited the process; specifically cited was turbulence in the course manager position (*Sustain* stage).

Other themes. Instructor selection, leadership support, and time pressures on training developers. These themes were not common across course stages, but do reflect areas cited by some participants that impacted innovation. Instructor selection, that is selecting or finding the right individuals who can implement ALM techniques and will invest the necessary time as instructor to maximize these techniques, was cited as a concern (*Sustain* stage). Leadership support was viewed as essential, as support for the ALM changes were more widely accepted when the leadership changed (*Sustain* stage). In both the *Sustain* and *Execute* stages, some training developers indicated that time pressures meant they were more reactive than proactive, and needed more time for planning and analysis to implement good revisions.

Champion. In general, champions were not cited in the questionnaires or the interviews. From the interview responses, it was clear that for two of the *Sustain* courses and one *Plan/Dev* course specific individuals were the driving force behind the changes. For the *Sustain* courses, two individuals, a training developer and an instructor, were present throughout the innovation process and had major responsibilities in planning and developing course changes as well as implementing them. For one *Plan/Dev* course, a training developer was identified as instrumental in planning the changes and in establishing good working relationships with the instructors and course manager to prepare for ALM implementation. However, turbulence in this position meant that this individual did not remain throughout the ALM process, and thus did not entirely meet Rogers' definition of a champion. In fact, turbulence in instructor/ training developer / course manager positions, in general, may have inhibited individuals serving as a "champion."

Roger's characteristics that affect rate of adoption. The interviews were coded for comments that corresponded to the rate of adoption characteristics in Rogers' (2003) work. Complexity clearly inhibited the rate of adoption for all courses. Although trialability, observability, and compatibility can have positive impacts on adoption, there were mixed results across the course stages. Table 10 summarizes these impacts. Details for each characteristic are in the text. As pointed out in the discussion, these characteristics were not always independent.

Relative advantage. Did those interviewed perceive ALM concepts and approaches as better than the legacy approach to instruction? Participants from every course perceived advantages from applying ALM. The primary advantages were as follows.

Increase in student motivation. Instructors indicated that the revised course changed student motivation and involvement mainly due to the reduction in PowerPoint slides and increase in class discussions. Responses also reflected that students liked being in groups mainly because they could help each other learn by conveying the information in a different way and by staying engaged in the learning process.

ALM was a better instructional approach. Others indicated they thought the revised hands-on approach, an emphasis upon practice exercises, holding students more accountable for their learning, and / or small-group work were better approaches. Instructors and course managers from some courses stressed the advantages of giving students more opportunities to practice what they learned, especially with small groups. It was noted that small group interaction enabled problem-solving at the group level.

Positive reaction to increased student accountability. Responses by some instructors indicated that the increased accountability placed on students (e.g., homework, read-aheads) allowed the instructors to more easily distinguish between students who wanted to learn versus those who were not adapting or not ready to apply what they learned.

Other indices of relative advantage were reflected in distinct comments made by those interviewed in three courses. One was that instructors did not want to go back to the old way of teaching. Another was that some prior graduates said they wanted to come back and teach the course. One course leader had feedback from the field that graduates were better prepared for their duty position.

Table 10

Course Profiles on Rogers' Rate of Adoption Characteristics

	Stage of Innovation		
Characteristic	Sustain	Execute	Plan/Dev
Relative Advantage *Perceived positive impact for all*	• No differences in courses: • Participants from every course perceived advantages from ALM • However, technical skills and/or procedural subject matter viewed as best taught via legacy, direct instruction methods		
Trialability *Mixed impacts*	• Leveraged trialability • Minimum of 3 pilots in each course • Trials or pilots were planned • Systematic observations of revised course	• Some trialability • One or two pilots in each course • Pilots not planned • No trials on portions of a course • No planned observations	• No trialability • Trials or pilots did not occur • Courses not executed
Observability *Mixed results*	• Observations influenced course improvements	• Observations influenced course improvements (2 courses) • Feedback on initial implementation planned to apply to next iteration (2 courses)	• No observations
Re-invention	• Re-invention of the initial course implementation occurred or was anticipated across all stages.		
Compatibility *Mixed results*	• Transfer of some ALM techniques used in other courses • ALM techniques perceived as way to address a training gap in one course	• Problem-solving exercises common in some legacy courses • Paradigm shift for some courses	• Little compatibility; paradigm shift in instructional techniques

	Stage of Innovation		
Characteristic	Sustain	Execute	Plan/Dev
Complexity *Slowed rate of adoption* *Primary factors varied with course*	• Broad scope of work for training developers • How to design exercises in accordance with ALM concepts • Challenges for training developers and instructors when students' backgrounds were diverse • More instructor preparation time when applying ALM • High level of subject matter expertise required by instructor • Training developer and instructor workloads increased	• Broad scope of work for training developers • How to design exercises in accordance with ALM concepts • Challenges for training developers and instructors when students' backgrounds were diverse • More instructor preparation time when applying ALM • Higher-order, external requirements extended the development process or made it more complex • Training developer and instructor workloads increased	• Shortage of training developers for scope of work, with increased workload • How to design exercises so instructors understood intent • Challenges for training developers and instructors when students' backgrounds were diverse • Lack of clarity regarding responsibilities of personnel

The primary area where ALM techniques/approaches were not perceived as having a relative advantage was with technical subject matter. ALM techniques/approaches were not necessarily perceived as having a "relative advantage" for technical and/or procedural subject matter. With technical content which may impact safety or accuracy or is highly detailed, instructors felt that facilitation techniques and/or small group techniques were not applicable (*Sustain* and *Execute* stages). In other words, the legacy approach with direct instruction was more appropriate.

Trialability. *How did trialability (course pilots) impact the innovation process and course implementation?* Trialability comments occurred only from the *Sustain* and *Execute* courses, not from the *Plan/Dev* courses as no pilots were conducted with those courses (see Table 12). A summary of the comments from the Sustain and *Execute* courses follows.

Sustain stage. Pilot implementations were executed for each course in the *Sustain* phase. In fact, the leadership for these courses specifically planned for pilots and for systematic observations of the pilots (3 to 5 pilots were executed). This allowed instructors and training developers to determine what actually worked with students, and the process created an important feedback loop between instructors and training developers. In the first pilot for each course in the *Sustain* stage, problems with the revised course were identified. A synopsis of what the participants said about each *Sustain* course is provided below to illustrate the variations as well as the commonalities in how pilots were conducted.

In one Sustain course, three pilot classes were authorized, and the instructors indicated that three pilots were necessary to determine the best approach. During the pilots, an assistant instructor took notes; changes were made in the next class.

In another Sustain course, five pilots were executed and the first did not work, so the focus changed. Each pilot was implemented on a specific lesson (not the entire course) with small groups. After each pilot, the lesson was examined and refined, and this cycle was repeated with another pilot lesson. Each time issues were identified and changes were made. A student survey was also given after one of the pilots. The leadership found it was necessary to work with the instructors to explain the changes and their new role.

In third Sustain course, training developers or their representatives observed the classes. The first revision of the course was found to be too difficult for students. In the second version, the content was broken down, the course was made more student-centric, and the instructors acted more as facilitators. Those interviewed found instructor resistance at first which diminished with the later pilots. Training developers also learned they had to rewrite the lesson plans to make them the more specific on what students needed to do. Thus, the revised lessons contained more notes for the instructors. After three iterations, participants indicated that no major changes were expected.

Execute stage. For the courses in the *Execute* phase, pilots occurred, but systematic plans for the pilots and for observation of the pilots did not exist. In addition, there was no attempt to pilot specific lessons versus the entire course. Participants did indicate that they made revisions based on the first iteration, which provides additional support for the value of conducting pilots when revising courses.

Observability. *Could the impact of the changes be observed, either in the students or instructors?* With curriculum changes, success of an innovation can be observed to some extent. For example, instructors can be monitored to determine if they are implementing the revised lessons as planned, and students can be observed to determine their reaction to the instruction.

Results on the trialability and relative advantage factors showed that behavioral changes in students and instructors could be and were observed. In fact, these changes were often the basis for continued improvements to courses in both the *Sustain* and *Execute* stages. However, there were no objective measures of performance which compared student performance before and after course changes were made. This topic is discussed more thoroughly in the section on Student Outcomes.

Compatibility. *To what extent were ALM concepts and objectives consistent with existing values, needs or past experiences of course personnel?* Based on the participants' comments, compatibility was not a major factor affecting the rate of innovation. However, for four courses it had a positive impact. The reasons compatibility had a positive impact for these courses are presented next.

For one course in the *Sustain* stage, personnel had applied ALM techniques such as facilitation and group work in another course. This prior experience transferred to the course in the SITA effort. For two other courses, instructors had used some ALM techniques as well. For once course in the *Sustain* stage, small group and hands-on instruction were not new. One course in the *Execute* stage had incorporated problem solving exercises in the legacy course.

For another *Sustain* course, personnel had recognized a training gap in the course. The course as structured did not meet the Army's needs and therefore changes like those proposed in ALM, which stressed students being more accountable for their learning, were perceived as needed. This need motivated those involved with making course changes, but it did not necessarily provide lessons learned as was the case when ALM techniques had been applied in another course.

In general, it appeared that for the other courses a paradigm shift in most instructional approaches was required. This topic is discussed further under the re-invention section.

Complexity. *How did complexity impact the rate of adoption and what types of complexity occurred?* Complexity of the innovation typically slows the rate of adoption. And complexity played a role in each course. However, the nature of complexity varied with the course. In general, there was an increase in workload for both training developers and instructors which delayed the rate of adoption.

The underlying triggers for increased workload were the very nature and scope of the training developers' and instructors' tasks, that is, training developers had to develop a new or revised program of instruction (POI) for an entire course which could also involve new content, and instructors had to teach a new or revised course which typically required different instructional techniques. The lesson plans for courses in the effort ranged from less than 20 to 50 and to almost 100 in one instance. The extent to which ALM revisions represented a paradigm

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shift complicated both the development and instructional processes. When the numbers of training developer personnel did not change or were insufficient, then the time required to make and implement the revisions increased. In addition, for most courses, the front-end analysis of how to revise the courses was limited, and training developers often made analysis and development decisions simultaneously. Complexity factors are described in turn for training developers and instructors.

Training developers. In the *Sustain* stage, training developers had to examine every lesson plan and rewrite the lesson plans to accommodate ALM concepts. In summary, these requirements contributed to increased workload in all courses in the *Sustain* stage. The revisions for each course were accomplished with assigned personnel but all training developers indicated that considerable additional time had to be devoted to the process. More information on each course is provided next.

For one course, the revisions were a major paradigm shift in training techniques and how the course was taught. Consequently the training developer revised one part of the course, and assessed its success and feasibility before starting on the next part. In addition, there was a restricting and integration of lesson plans reducing them by half.

In another course, although many of the instructional techniques under development were similar to ALM concepts, the pilots provided instructional feedback from the instructors which required additional changes by the training developers. Also training developers had to re-sequence the instructional models and the course length changed. Another complicating factor for training developers was how to apply ALM concepts when the student backgrounds were diverse and proficiency levels varied. Training developers stated it was challenging to determine how to revise the course and develop appropriate exercises because sufficient guidance on these topics did not occur until seven or eight weeks into the course.

In the third course, the instructor was also a developer/writer. Although this approach may have allowed for better transfer of lesson plans to the classroom, it increased the workload substantially.

In the *Execute* courses, training developers had the same challenges as those in the Sustain phase. Complexity increased the timeline for course changes.

For three of the four *Execute* courses, training developers had to focus on more than ALM revisions. Developers had to address higher-order, external requirements, such as doctrinal changes, restructuring of the course content, change in course length, and/or the need to tailor the course to the both the active and reserve components made the development process longer and/or more complex. These external requirements were the primary factors impacting the longer timeline for the Execute versus the Sustain courses.

In addition, in one course, developers also indicated that it was hard to apply ALM concepts to a course which focused on foundational skills as the students had limited experience. Scenarios had to be very basic in order to facilitate discussions. Training developers in one

course estimated their workload doubled or tripled. In another course, training developers indicated that rubics were not always easy to develop.

In the *Plan/dev* stage, the main factors contributing to complexity were scenario development and writing lesson plans so instructors could implement ALM concepts appropriately.

In one course, the training developer indicated it was a challenge to ensure that the lesson plans were written so instructors understood the intent and how ALM concepts were to be applied. Notes were added to the lesson plans to assist the instructors. These difficulties were compounded by lack of clarity regarding the responsibilities of personnel within the organization. The workload was so great for the single training developer that the course revisions could not be completed.

In the other two courses, a primary challenge was developing scenarios or exercises for students that would allow instructors to facilitate discussions. This was even more difficult when the student population was diverse in terms of background, knowledge, and skills. A training developer indicated that often the instructor must flesh out the details on how the exercises could best be conducted.

Instructors. Instructors in courses where pilots were conducted indicated they typically revised what was done on the first pilot as they learned how to apply ALM concepts better. In all stages where the instructor was a developer/writer, there was an extensive amount of research and work to ensure that the lesson plans had the necessary background information, that tests were revised, and that they, as instructors, were sufficiently knowledgeable to facilitate discussions.

Instructors in the *Sustain* stage, indicated their workload increased; in one case it was estimated to triple or quadruple. Increases were attributed primarily to the requirement for an instructor to be a subject matter expert to facilitate discussion and enable students to be problem-solvers. A high-level of knowledge was needed to answer student questions, and to correct students when their knowledge was inaccurate. Instructor preparation time increased in these courses. In addition, when tests were modified to essay-type questions from multiple-choice questions, instructor workload increased. For one course, instructors were challenged in how to apply ALM concepts when the students' backgrounds were diverse.

Instructors in the *Execute* courses needed time to adapt to ALM concepts; they had to develop or obtain more source materials for read-aheads or home work; ALM required more instructor preparation. A change from multiple-choice tests to more essay type tests required more time to grade as was the case with similar courses in the *Sustain* stage. When classes had students who lacked prerequisite knowledge, instructors were challenged in addressing the learning requirements of these students. One instructor indicated that this initially meant a greater workload, but the benefit was large. These factors all contributed to increased instructor workload.

Adequate instructor preparation was a theme in the *Plan/Dev* stage as well. One instructor indicated that preparation required individual initiative, with the instructor taking a variety of courses in related subject matter areas to be able to address student questions. For another course, instructors were challenged in how to develop exercises for the purpose of discussion and how to adapt to individual differences in student's prior knowledge.

Joint effects of training developers and instructors on complexity. Another complication cited by some participants from all stages was that typically training developers were civilians and instructors were military. A leader from one *Plan/Dev* course stressed this point. Instructors are the subject matter experts on course content and knowledge/skill requirements, while the training developers are skilled in writing lessons and assessments. To yield the desired product, the two skill sets must be merged. Yet merging is challenging and makes the development and implementation processes more complex. In some courses, these skill sets were merged by having the same individuals be both training developers and instructors, in conjunction with a plan to ensure appropriate training for both responsibilities.

Re-invention. Re-invention overlapped with both trialability and compatibility.

Relationship to compatibility. As mentioned previously under compatibility, some courses in the *Sustain* stage had already instituted changes which were perceived to be consistent with ALM concepts (facilitation, group work, hands-on training, problem-solving exercises). These were ALM techniques they were currently doing. However, they often had to modify or expand some other instructional approaches. Thus, for some CoEs, ALM concepts were not perceived as a major paradigm shift or as doing something entirely different.

Relationship to trialability. Courses with more than one pilot made revisions for the next pilot. Consequently, many of the comments under trialability apply to re-invention as well; the changes with the first implementation were not fixed, nor were they necessarily expected to be fixed.

For example, in one course in the *Sustain* stage, training developers stated that they had to rewrite the course two times, and push back the timeline to make the changes after the first pilot. In a course in the *Execute* stage, while the training developer was observing, other changes were suggested. Instructors and training developers both acknowledged that given the same lesson plans, instructors could implement the lessons quite differently. With one course in the *Plan/Dev* stage, the training developer anticipated changes during execution even though the course had not been implemented.

Paradigm shift. Lastly for some courses, regardless of whether there were pilot efforts, the initial revisions did involve a paradigm shift from the typical instructional techniques in the legacy courses. The paradigm shift was reflected primarily in switching to a facilitation mode of instruction which required experienced instructors to change their approach to the classroom, in requiring students to be more responsible for their own learning, in emphasizing small group or peer-to-peer learning, and in changing the nature of student assessments/tests.

Student Outcomes

Student outcomes and reactions were only available from courses in the *Sustain* and *Execute* stages. Unfortunately, no objective performance data were available which compared student performance in the legacy course to performance in the revised courses. And with some courses in both stages, such performance comparisons were not possible as the tests themselves were modified to be more consistent with ALM concepts. Also, instructors and training developers in two *Sustain* courses and one *Execute* course indicated it was too early to receive feedback on graduates' performance from the receiving units. Pass rates were not perceived as changing in one *Sustain* course, while in one *Execute* course pass rates declined from the legacy course because of increased course and test rigor.

Consequently, feedback on student performance was based primarily on the perceptions of training developers and/or instructors. Instructors in one *Sustain* course felt performance had increased, specifically citing better briefs. An instructor in the *Execute* stage could not judge whether retention of the subject matter in the receiving unit would be better. For one course in the *Sustain* phase, a student was designated the Distinguished Honor Graduate by the battalion for receiving 100s on all tests, an event that was stated to occur about once every three years.

Training developers and instructors perceived most students as being more engaged in all *Sustain* and *Execute* courses (e.g., asked more questions, more involved, more interested in learning, showed more initiative). End-of-course critiques in two *Execute* courses were positive.

Instructors in two *Execute* courses indicated that some students reacted negatively (e.g., complained about homework). Instructors attributed these reactions to the fact that these students did not grasp the intent of the revised approach and did not know how to study.

ALM Instructional Techniques

Ten instructional techniques were examined. Use of the techniques did not discriminate course stage. Eight were clearly widespread, being implemented in at least 80% of the courses. In fact, four techniques were used or planned to be used in all ten courses. Table 13 shows the number of courses that used ALM instructional techniques. Examples of how these techniques were implemented follow, with the most frequently used techniques cited first.

Reduction in PowerPoint slides and instructor lectures. As stated, across all courses there was a substantial reduction in PowerPoint slides. Directly associated with this was a reduction in instructor lectures. For example, in one course, an instructor indicated there were lessons with no slides. Yet PowerPoint slides were retained for certain subjects, primarily as training aides for illustrations and graphics (e.g., diagrams, maps, illustration of equipment, route overlays).

Table 13
Number of Courses Using ALM Instructional Techniques

Instructional Technique	Number (%) of Courses Using Technique
Reduction in PowerPoint and instructor lectures	10 (100%)
Facilitation	10 (100%)
Learner-centric approach	10 (100%)
Specific assessment techniques	10 (100%)
Group work	9 (90%)
Peer-to-peer learning	9 (90%)
Hands-on practical exercises	8 (80%)
Homework / read aheads	8 (80%)
Tailored training	6 (60%)
Capstone exercises	5 (50%)

Facilitation. All courses stressed facilitation, although, as discussed previously under the section on Instructor Knowledge and Understanding of ALM, this was not necessarily an easy skill for instructors to acquire. Another difficulty with facilitation was when a portion of the students in the courses had limited background/ knowledge regarding the content, making it hard for instructors to stimulate student discussions and participation. Facilitation also was difficult with a 1:20 or greater instructor to student ratio; a 1:14 ratio was viewed as better.

Techniques to increase facilitation were cited. One technique was to require students to provide more than one-word answers and to ask questions of the student who did not contribute to the conversation or take them aside for a one-on-one (*Sustain*)

Learner-centric. Learner-centric techniques took different forms depending on the content and student populations. However, a learner-centric approach was typically associated with problem-solving experiences, having students be responsible for their own learning, and in some cases role-playing of duty positions. It also meant less PowerPoint and sharing of experiences. For some of the more advanced courses, the learner-centric approach involved having students lead the exercises.

Assessment. Three forms of assessment were used: pre-tests, subject matter tests, and rubrics.

Pre-tests. The need for pre-tests was acknowledged but typically did not meet the need. Most individuals acknowledged a need for a pre-test to help them identify student strengths and weaknesses. However, pre-tests did not always function appropriately; they did not necessarily identify individuals who needed assistance; the coverage of the pre-test was too narrow and did not focus on current lesson plans. These comments reflect findings in prior ARI work on pre-tests (Schaefer & Dyer, 2014; Stallings, Dyer, Wampler & Cobb, 2014), that a good pre-test must assess relevant prior knowledge. A unique use of a pre-test in one course was to motivate students by showing them what they did not know.

Subject matter tests. Traditional subject matter tests were retained for grading students but were replaced by more challenging tests in the more advanced courses. Most instructors indicated they used exams, tests, and/or performance tests during courses to assess students to grade students. In some cases where the focus was on hands-on testing or group testing, instructors said they also needed written tests. Because the focus in more advanced courses was on the ability to think or solve problems, the tests were often changed (e.g., no more open-book, fewer multiple-choice or true-false, less memorization, not all tested material presented in class). Scenarios could also be inserted in test items which required students to solve problems. Such test revisions resulted in negative responses by students who did not assume responsibility for their own learning, as was required in some course revisions.

Rubrics. There were mixed reactions to rubrics, with the greatest concern being the time required to apply them as intended. Typically those interviewed indicated problems with rubrics: to include insufficient time to use them (e.g., no time for both a pre-test and rubrics), difficult to turn into a grade, not applied appropriately, and difficulties in assessing young Soldiers with rubrics. Some instructors successfully applied rubrics to 21st Century competencies or in counseling sessions. And some instructors thought their rubrics would be a good model for others. Also rubrics were perceived as easier to apply in the field than in the classroom.

Group work. With the shift from a lecture mode of instruction, the most common alternative was to conduct work in small groups. For instance, when major items of tactical equipment were used, then group work was typical. Groups were also used to pair more experienced students with weaker students which facilitated peer-to-peer learning and was also viewed by most as a form of tailored training. If the instructor to student ratio was 1 to 30, instructors found it more difficult to break into groups, but could sometimes pair the strong with the weak. Often group work was followed by a briefing to the class as a whole, with instructors insuring that more than one person briefed. One instructor estimated that in the legacy course there was little to no group work, whereas with the revised course it was 60 to 70%.

Peer-to-peer learning. Peer-to-peer learning and peer interaction were relatively common because of the shift to small group work. Instructors could deliberately pair stronger with weaker students, but in other cases, the pairing or interaction with peers would happen as a matter of course. Sometimes "high speed" groups who finished early would help other groups. In general, the instructors indicated that students liked being in groups where they could talk to and learn from each other. Instructors found that students explained concepts in a different way to get points across. However, instructors had to monitor carefully to insure explanations and concepts were correct.

Hands-on practical exercises. Hands-on practical exercises were common when equipment was involved in basic courses, with instructors monitoring students to assist in discussion of issues and problems. For example, instructors would try to get students to think about the problem, particularly when they were going in the wrong direction. Instructors would pose questions about student decisions, not just tell them they were wrong. The hands-on exercises were viewed as one way of developing the technical competence needed, as instructors believed that students retain less when they are "talked at." Hands-on exercises also led to repetition, which was viewed as increasing retention of information. Decision-making and

planning exercises also fell in this instructional category. In these courses, the hands-on exercises were graded.

Homework/read-aheads. With the ALM emphasis on decision-making and problem solving and challenging students, many of the courses shifted the burden of learning from the instructor to the student with homework or readaheads.

When assigning homework or read-aheads for the next class, students were to come prepared to the class with this newly-acquired knowledge. To illustrate the change in emphasis and why homework/read-aheads were needed, in one revised course the instructors said only 25% of what the student was tested on was in the lesson plans. The rest of the information had to be found outside of the course, whereas in the old program of instruction, the instructors covered everything in the tests.

There were both positive and negative effects of this change. For a basic course, instructors found that not all students had time to get to the homework assignment. For more advanced courses, instructors also found that not all students did their homework or read-aheads, which was evident in their inability to participate in class or in a high failure rate on exams. Some students did not adapt to this shift in responsibility and reacted negatively. Other students reacted very positively, rose to meet the challenge, and enjoyed this form of training.

Tailored training. When classes were composed of students with diverse backgrounds, instructors were challenged on how to adapt to this diversity. Some instructors overcame this challenge by tailoring the training to the varying levels of student expertise. The most extensive comments were provided by individuals representing the *Sustain* stage.

Tailored training was addressed in different ways, although it appeared tailored training techniques were not deliberately incorporated into the courses but typically left to the discretion of the instructor. One common means was to pair strong with weak students to enable students to teach students. This approach was consistent with the findings by Dyer, Wampler and Blankenbeckler (2011). When there were sufficient instructors, instructors took struggling students aside and worked with them. A limited number of instructors indicated they tried to challenge those who were more capable or who wanted to achieve more by giving them additional exercises. In other cases, instructors indicated that they couldn't tailor because of limited time and/or that challenging the more capable individuals was difficult because of constraints on the number of instructors.

Capstone exercises. Capstone exercises existed in half the courses. They varied in scope and were not new to the course, e.g., a team–based exercise, a planning exercise, a field training exercise, and an "engagement activity." In one course a capstone exercise was added, requiring development of a plan, briefing the plan, and executing it.

Relationship among training techniques. The picture which emerged from these profiles, as illustrated in Figure 5, was that reliance on PowerPoint (a "sage on a stage") was replaced by efforts to facilitate learning and thinking via the instructor and/or through small groups, peer-to-peer interactions, and hands-on practical exercises. More responsibility was placed on the students with home-work and read-ahead materials as well as a change in test procedures. PowerPoint slides were greatly reduced but not necessarily eliminated. Tailored training was of concern when the student population had diverse backgrounds. Of note, is that new technologies or simulations were not introduced; existing technologies were used.
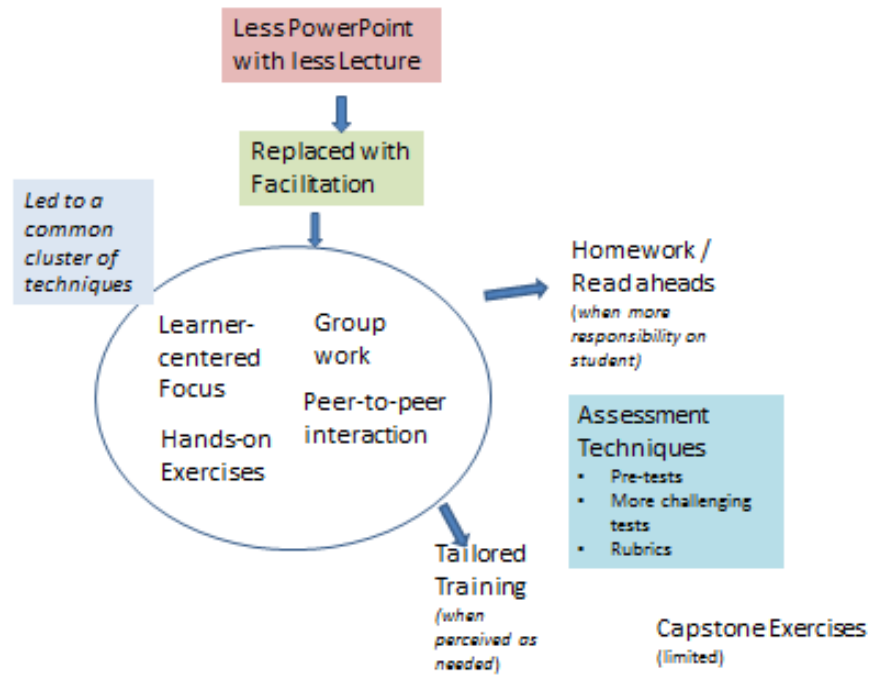
Figure 5. Relationship among training techniques and approaches.

Soldier Competencies

The results for the 21st Century Soldier competencies stressed in the courses were based primarily on the interviews. For courses in the *Plan/Dev* stage, the competencies were based on the plan and lesson development at that point. There were three divisions to the competency frequencies. Two (character and accountability, and tactical and technical) were stressed in all courses, four (adaptability and initiative, critical thinking and problem-solving, communication and engagement, teamwork and collaboration) were stressed in most courses, and three (life-long learner, comprehensive fitness, and cultural and JIIM) were used in two or fewer courses. The most common competencies that were stressed are discussed below.

Character and accountability. Accountability was stressed by placing more responsibility on students for own learning through homework, read-aheads and/or nature of course test. Instructors often instituted consequences when preparatory work was not done. Instructors reported behavioral changes in students when they did not perform well on tests. For some advanced courses, accountability demands were viewed as a cultural change. Some instructors felt that placing students in a leadership was also a form of accountability.

Tactical and technical. The revised course gave students the opportunity to practice job skills and to be tested on them. Primary course purpose was tactical and technical competency/expertise.

Adaptability and initiative. In the *Sustain* and *Plan/Dev* stages, changing training scenarios and conditions or responsibilities in training situations were viewed as techniques which required students to adapt.

Critical Thinking and problem solving. For *the Sustain* and *Execute* stages, the revised course was viewed as providing opportunities to solve problems through classroom and/or field exercises. In the more advanced courses in the *Sustain* stage, research papers also facilitated this competency.

Teamwork and collaboration. For the *Sustain* and *Plan/Dev* stages, increased emphasis on group activities was viewed to foster teamwork and collaboration. For the *Execute* stage, field training exercises and equipment set-up procedures were viewed to foster this competency.

Communication and engagement. The consensus was that student briefings fostered communication skills.

Lessons Learned From the Follow-on of Course Graduates

In the follow-on effort, 30 graduates of a revised course, 23 graduates of a legacy course, and 25 leaders were interviewed. The main findings are reported below and provide good lessons learned for enhancing learning outcomes from a training context to 'on-the-job performance' (see Transfer of Training Lessons on page 39).

Several challenges were encountered in linking changes in the course mode of instruction to duty position performance. First, the eventual unit position can differ from the focus of the course. Consequently, some graduates stated that the course did not prepare them for certain duty position requirements. Second, unit leaders often had difficulties in determining whether the graduates' performance in the unit resulted from the training or from the students' prior experiences and abilities.

Comments were made by course graduates on ALM techniques. The students' backgrounds and knowledge in this course were quite diverse. Graduates indicated a desire for the course instructors to leverage this experience and knowledge rather than treating everyone similarly (i.e., wanted more tailored training). On the other hand, the graduates did react positively to being required to brief, teach classes to others, and mentor others with less

experience and knowledge. They also valued the hands-on practical exercises and wanted more of these. Graduates with prior relevant knowledge and experience benefitted more from the course as they were able to understand how the course related to their future duty positions.

Conclusions and Recommendations

This section provides the main findings from the current research as well as recommended strategies for implanting large-scale curriculum changes in the Army School System. See Appendix E for supplemental information on the effects of some of the facilitating and inhibiting factors.

A major conclusion from the research is that the timeframe to implement substantial curriculum is 1.5 to 2 years with sufficient time to ensure the changes are being implemented as intended. The process is complex as it involves different organizations, must be sufficiently robust to withstand personnel turbulence, and requires that all personnel involved are adequately trained on the new requirements and new techniques.

The change process followed prior research findings on the diffusion of innovations (Rogers, 2003), with the facilitating and inhibiting factors also reflecting what has been documented in this body of research. Factors that facilitated the process were when:

- Personnel viewed the ALM as relevant and viable for the course and benefiting students,
- There was initial agreement among key players on the revisions,
- There was a minimal paradigm shift in instructional approaches,
- Both training developers and instructors were trained well on ALM,
- Pilots of the course were conducted,
- Training developers and instructors coordinated regarding both the changes themselves and implementation of the changes,
- Reduced use of PowerPoint "forced" a change in instructional approaches to facilitation and small group work; there was a champion who insured continual progress in all stages of innovation, and.
- The instructors and training developers worked very hard at implementing ALM concepts and contributed to the successes that occurred.

Factors that inhibited the process, which primarily impacted training developer workload and lengthened the timeline, were when:

- Training developer workload was high,
- Turbulence occurred in key positions: course manager, training developer, instructor,
- There were shortages of instructors,
- Higher-level factors required changes in addition to ALM, and
- There was insufficient guidance on how to develop lesson plans to facilitate critical thinking and problem-solving.

Factors that made the ALM process challenging for instructors were when:

- Substantial individual differences in prior knowledge and/or experience occurred within the student population,
- Greater subject matter knowledge was required to be a good facilitator; instructors needed more training on facilitation techniques.
- Instructors often had difficulties in making major behavioral changes which were inconsistent with how they had been taught or how they had been teaching, and
- Not all students reacted positively to being more accountable for their own learning.

Another critical factor is to assess the impact of the changes. Decision-makers want to know if the desired changes were implemented by instructors. If the answer is affirmative, then the next question becomes did these changes impact students. What was the return on investment? Did students learn more, did they retain information longer, could they apply the information more effectively, did they have a more in-depth understanding of the material, etc.? However, the typical focus found in the research was on making the curriculum changes, not on *planning* for or executing a *systematic assessment* of student performance. Although students may be surveyed regarding their reactions to changes, this is not equivalent to obtaining data on student performance or proficiency. *Whenever possible, the evaluation plan to assess the effects of the major curriculum changes should include formal, objective measures of student performance.* These assessments should occur *before* and *after* the changes have been made to address decision-makers' questions on the value of such changes (not while the changes are in progress).

Sustainment of Curriculum Changes

The following four factors were identified from the research findings that affect the degree to which the curriculum changes will be sustained over time.

Execute pilot efforts. Curriculum developers should plan to execute the course changes via pilots (across several iterations of the course). The findings indicated that the courses that adopted this method accelerated the implementation of ALM and indicated that the course was in a steady state (only minor changes were expected in the near future). This was due in part to the faster feedback cycle between training developers and instructors such that the training developers learned of any revisions that needed to be made to the lesson plans at a much faster rate.

Communicate the tenets of the proposed curriculum change. Organizational procedures for communicating the tenets of ALM as well as how the organization has adopted these tenets to new personnel are critical to sustain the curriculum changes.

Train instructors on how to implement the changes. A key factor underlying the majority of the research findings and in sustaining curriculum changes is how well instructors are trained to implement the types of techniques required by the ALM. As new instructors are assigned to courses, these instructors need to know the overall purpose of the ALM and the specific techniques, methods, and processes for implementing, sustaining, and furthering the

ALM tenets within Army courses. Leaders should support sending instructors to follow-on courses to the Army Basic Instructor Course (ABIC) and the Small Group Instructor Training Course (SGITC) to further develop tailored training and facilitation techniques. If instructors have additional opportunities to learn and practice facilitation techniques, they will be more apt to use these techniques in the classroom and share these new techniques with other instructors.

Obtain feedback on success of course changes. Participants indicated a need to obtain feedback from course graduates when they are in their gaining units. Participants indicated that these data would be helpful in determining the success of the course changes and if further revisions are needed.

Transfer of Training Lessons Learned from Follow-On Research

To maximize transfer of learning outcomes, tailored training approaches need to be implemented and sustained in the courses. To better retain content, students and instructors who have lower levels of background knowledge and experience need *more*:

- Instructor coaching/mentoring and feedback

- Opportunities to practice tasks and master content (e.g., additional exercises, teaching experiences, role playing)

- Peer-to-peer learning opportunities to benefit from experienced students/instructors including observing task demonstrations

Finally, to maximize application of ALM methods by course graduates, gaining units need to implement processes that support the tenets of ALM. Although the primary tenets of ALM are focused on increasing student learning, sub-goals of the Army Learning Concept 2015 are to provide instructors and trainers with techniques that they can use both in institutional and operational units. Unit leaders who create environments for Soldiers to conduct training based on their knowledge and experience executing the ALM can maximize and enhance the widely utilized train-the-trainer method.

Roadmap for Success

The following recommendations are made for implementing major curriculum changes or innovations within Army institutional courses (see the flow chart in Figure 6 on the next two pages). The recommendations stress the importance of a good plan to include performance assessment and involvement by all key players.

• Decision-making and Planning Phases

Start Right

Key Players
- Obtain agreement and input from all key players on the approach
- Identify individual/unit responsible for overseeing implementation of innovation plans

Resources
- Conduct required training analysis to support the approach
- Implement training plan for key players
- Estimate degree of change to determine resources (personnel, time) required during later phases

Plan for Feedback
- Plan for a phased implementation approach (pilot the course or course lessons) with more than one implementation and with systematic observation of training
- Plan for baseline assessment of student performance

Check the Situation
- Determine if there are other higher-level changes to be made simultaneously and must be considered in workloads and timelines

• Development Phase

Start Changes

Coordinate & Monitor
- Establish a policy for interaction between training developers and instructors
- Review draft lesson plans to ensure vision and intent of changes are being made

Adjust as needed
- Determine if there are unanticipated effects when development is underway (e.g., shortage or turbulence of personnel) and make necessary adjustments

In the Classroom

• Execution Phase

Instructor / TD Interaction

- Ensure there is an observer monitoring the execution of changes who provides instructor feedback to training developers

Feedback

- Obtain feedback from students, when possible
- Determine whether feedback is used to further revise lesson plans, and if necessary, to modify the original innovation

End right

• Sustainment Phase

Resources Again

- Ensure resources are adequate to sustain instructional changes (e.g., instructor training to reduce negative impacts of instructor turbulence)

Student Outcomes

- Assess student reaction to course
- Assess student performance and compare with baseline performance
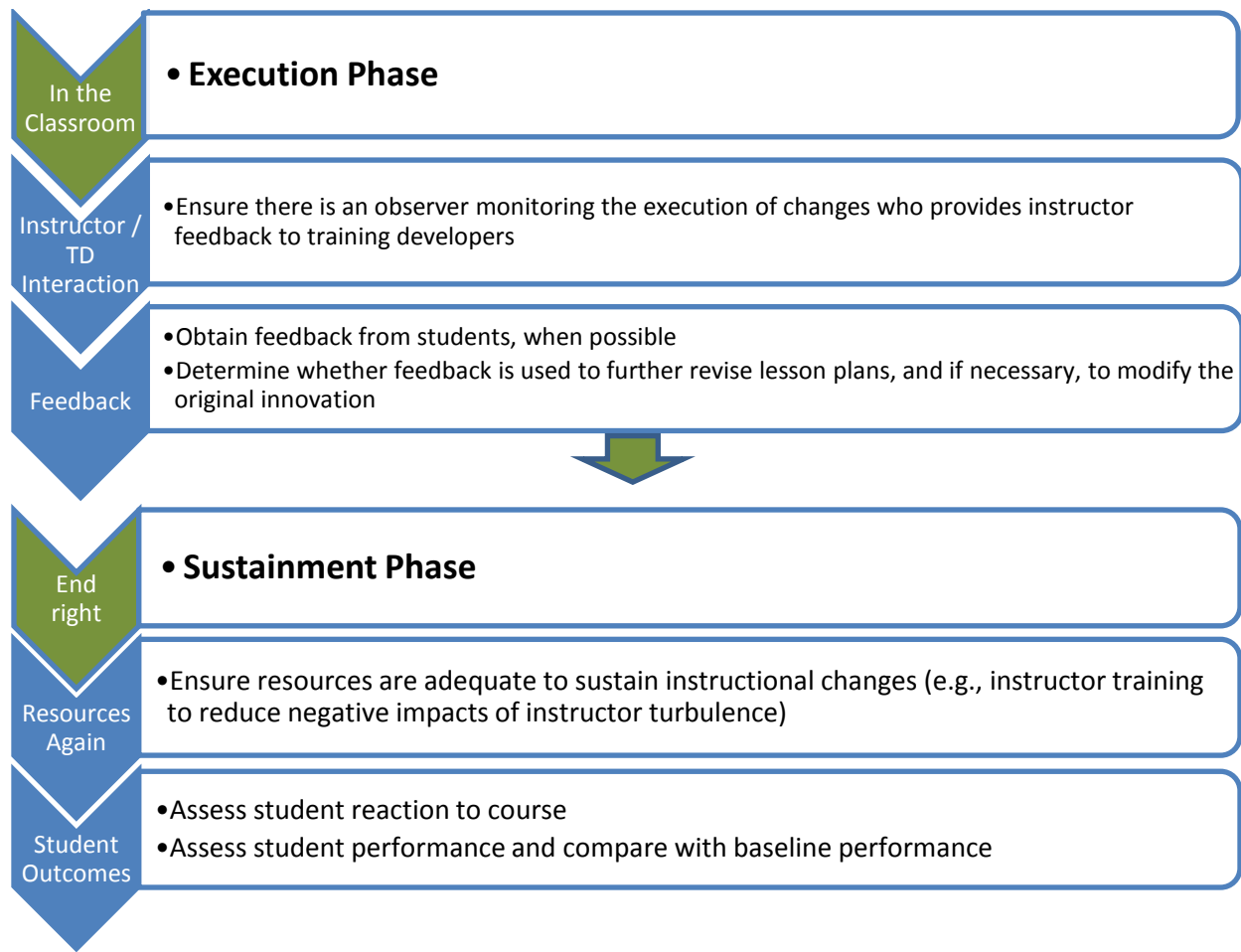
Figure 6. Roadmap for Success: Recommendations for the implementation of curriculum innovations.

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Appendix A
21st Century Soldier Competencies

Character and accountability

a. Soldiers and leaders demonstrate Army values, the Soldier's Creed, and Warrior Ethos through action while also developing character and accountability in subordinates. They accept obligations of service before self and for assigned tasks, missions, their subordinates, and themselves while building confidence in leaders, peers, and subordinates that they can be counted upon to accomplish goals. Soldier and leader actions are guided by the Army Ethic, which consists of the shared values, beliefs, ideals, and principles held by the Army Profession of Arms and embedded in its culture that are taught to, internalized by, and practiced by all Soldiers in full-spectrum operations as well as peacetime.

b. Adhering to and internalizing the Army Ethic develops strong character, ethical reasoning and decision-making, empathy for others, and the self-discipline to always do what is right for fellow Soldiers, the Army, and the Nation. Character enables the Soldier to operate in a complex and uncertain environment with the understanding that the Soldier is individually accountable for not only what is done, but also for what might not be done. The pride, esprit, and ethos required of Soldiers as members of the Profession of Arms may require them to sacrifice themselves willingly to preserve the Nation, accomplish the mission, or protect the lives of fellow Soldiers. Qualities of character and ethical behavior will be stressed at every level.

Comprehensive fitness

Soldiers and leaders develop and maintain individual, as well as that of their subordinates, physical, emotional, social, Family, and spiritual fitness. They display physical, mental, and emotional persistence, quickly recover from difficult situations, and exemplify the resilience necessary to fight and win in any operational situation.

Adaptability and initiative

a. Soldiers and leaders are comfortable operating in unexpected situations throughout the world. They scan the environment, identify unique or unexpected conditions, and adjust to handle the situation effectively.

b. Soldiers and leaders recognize when standard procedures are not an effective solution to a situation and use innovation to develop new procedures, devices, and others, that are necessary to handle the situation. Mental agility and a global mindset allow them to anticipate changes in the operational environment, adapt to the changes, and anticipate the second and third order effects of their actions and decisions.

c. Soldiers and leaders take appropriate action and calculated risks in the absence of orders or in situations that require modifying orders to achieve the commander's intent while also developing initiative and risk taking in subordinates. They anticipate changes in the operational environment assess the situation and use sound judgment to decide when and how to act. Self-awareness allows Soldiers and leaders to monitor and adjust their actions and those of their teams to constantly assess performance and seek improvement.

Lifelong learner (includes digital literacy)
a. Soldiers and leaders continually assess themselves, identify what they need to learn and use skills that help them to effectively acquire and update knowledge, skills, and attitudes. Soldiers and leaders value and integrate all forms of learning (formal, informal) on a daily basis to seek improvement of themselves and their organizations continuously.
b. Soldiers and Leaders access, evaluate, and use information from a variety of sources and leverage technology (hardware and software) to improve their effectiveness and that of their teams while executing the Army's missions. Digital literacy skills are developed at initial entry and increase progressively at each career level.

Teamwork and collaboration
Soldiers and leaders create high-performing formal and informal groups by leading, motivating, and influencing individuals and partners to work toward common goals effectively. They are effective team members, understand team dynamics, and take appropriate action to foster trust, cohesion, communication, cooperation, effectiveness, and dependability within the team. Leaders build teams, seek multiple perspectives, alternative viewpoints, and manage team conflict.

Communication and engagement (oral, written, and negotiation)
a. Soldiers and leaders express themselves clearly and succinctly in oral, written, and digital communications. They use interpersonal tact, influence, and communication to build effective working relationships and social networks that facilitate knowledge acquisition and provide feedback necessary for continuous improvement.
b. Soldiers and leaders inform and educate U.S., allied, and other relevant publics and actors to gain and maintain trust, confidence, and support. Engagement is characterized by a comprehensive commitment to transparency, accountability, and credibility, and is an imperative of 21st century operations.

Critical thinking and problem solving
Soldiers and leaders analyze and evaluate thinking, with a view to improving it. They solve complex problems by using experiences, training, education, critical questioning, convergent, critical, and creative thinking, and collaboration to develop solutions. Throughout their careers, Soldiers and leaders continue to analyze information and hone thinking skills while handling problems of increasing complexity. Select leaders also develop strategic thinking skills necessary for assignments at the national level.

Cultural and joint, interagency, intergovernmental, and multinational competence
Soldiers and leaders use cultural fundamentals, self-awareness skills, and regional competence to act effectively in any situation. They use communication, including foreign language, influence, and relational skills to work effectively in varied cultural and joint, interagency, intergovernmental, and multinational contexts. Soldiers and leaders consider and are sensitive to socially transmitted behavior patterns and beliefs of individuals from other communities and/or countries and effectively partner, influence, and operate in complex joint, interagency, intergovernmental, and multinational environments.

Tactical and technical competence (full spectrum capable)
a. Soldiers and leaders employ tactical and technical skills in full-spectrum operations to accomplish the mission and support the commander's intent. They are experts on weapons systems, combined arms operations, and train their subordinates to be technically and tactically competent. At lower levels, they are technical experts in their specialty and continue to develop their technical skills and those in their subordinates. As leaders grow, they increase their understanding and application of mission command, operational contexts, systems, and technology while operating in increasingly complex environments.

b. Soldiers and leaders are prepared to execute offensive, defensive, stability, and civil support missions throughout the continuum of operations and transition between diverse tasks and operational actions as complex and uncertain operational situations are developed through action. Leaders anticipate tactical, operational, and strategic transitions and use mission command to apply lethal and nonlethal effects to achieve the commander's intent.

Source: Department of the Army. (2011). *The U. S. Army learning concept for 2015* (TRADOC Pamphlet 525-8-2). Ft. Monroe, VA: Training and Doctrine Command. pages 41-43.

Appendix B
Interview Protocols and Participant Questionnaires

Appendix B Contents

Introduction to Interview Questions
Background Interview Questions
Background Participant Questionnaire
Decision-Making Process Interview Questions
Planning and Identifying Solutions Interview Questions
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Sustainment of Course Changes

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INTRODUCTION TO INTERVIEW QUESTIONS

In 2012, TRADOC G-3/5/7 initiated the Shot-in-the-Arm (SITA) Phase I Instructional Design Course (IDC). CAC LDE was the lead to support schools in developing skill sets to implement the Army Learning Model (called ALM). The next year, in 2013, G-3/5/7 initiated SITA Phase II Adaptive Soldier and Leader Training and Education (ASLTE) Mobile Training Team effort. The Asymmetric Warfare Group (AWG) was the lead. SITA Phase II ASLTE was identified as a CG, TRADOC priority and each school was tasked to revise one course integrating ALM concepts and ASLTE principles.

TRADOC G-3/5/7 requested that ARI examine a sample of courses to identify lessons learned regarding the implementation process as ALM concepts and ASLTE principles were integrated into revised courses. The __[*insert name of course*]__ was one of the courses identified by TRADOC.

We are interested in understanding how the implementation process evolved/occurred here at your school. We will start with the decision to select ___[*insert name of course*]__ for TRADOC's SITA effort, continue through your entire planning and development processes and end with your plans to sustain the course revisions.

We are interviewing individuals involved with the implementation of ALM concepts in ___[*insert name of course*]__. This includes training developers, instructors, course managers, staff and faculty, quality assurance individuals, and appropriate leaders. We know that these individuals have different roles, and the interview will focus on your specific role. First we will ask you to complete some background questions to gain an understanding of your major roles and responsibilities. Follow-on questions will then be directed toward your specific role.

We greatly appreciate your participation in this effort. It will allow us to provide TRADOC G-3/5/7 an analysis and recommendations on lessons learned and how they can improve the implementation process in the future.

BACKGROUND INTERVIEW QUESTIONS

1. **Course information**

   Note, ARI may be able to obtain this course information from the Point of Contact at the School prior to our visit. If obtained, the course information questions will not be asked.

   a. Class size_____

   b. Number of military instructors _____civilian_____

   c. Length of course_____

   d. Frequency of course_____

   e. Specific Army equipment / ranges / facilities used_____

   f. Student Population_____

Interviewer:
- **Request the individuals complete the background questionnaire. Indicate that you will be asking some follow-up questions.**
- **Collect all the completed questionnaires and examine the responses to each question.**

SITA

2. Did you attend SITA Ph I Instructional Design Course (IDC)? _____Yes _____No

   a. If yes:

      Was SITA I held prior to or following the selection of the revised course?   Prior   After

      Was SITA I held prior to or following the planning for the revised course? Prior After

   b. What was the timeframe for SITA Ph I?

   c. What are the main concepts/ ideas/ techniques you remember from the SITA Ph I? Probe on the following

      i. Learner centric training (what does this mean to you?)

      ii. Soldier competencies

      iii. Developing outcome statements

      iv. Blended learning

      v. Tailoring

      vi. Training technologies

      vii. Measurement of competencies

      viii. Developing lesson plans

   d. What was the content and method of the student-focused exercises in which you participated in SITA Ph I?

3. Did you attend SITA Phase II Adaptive Soldier and Leader Training and Education (ASLTE) MTT in 2013? _____ Yes _____ No
    a. If yes:

    Was SITA II held prior to or following the selection of the revised course? Prior After

    Was SITA II held prior to or following the planning for the revised course? Prior After

    b. What was the timeframe for SITA II?

    c. What are the main concepts/ ideas/ techniques you remember from the SITA II? Probe on the following
        i. Learner centric training (what does this mean to you?)
        ii. Soldier competencies
        iii. Developing outcome statements
        iv. Blended learning
        v. Tailoring
        vi. Training technologies
        vii. Measurement of competencies
        viii. Developing lesson plans
    d. What was the content and method of the student-focused exercises in which you participated?

4. Did you attend a SITA Ph II Follow-on MTT? _____ Yes _____ No
    a. What was the timeframe for the SITA Ph II Follow-on MTT?
    b. What are the main concepts/ ideas/ techniques you remember from the SITA Follow-on MTTs? Probe on the following
        (i) Learner centric training (what does this mean to you?)
        (ii) Soldier competencies
        (iii) Developing outcome statements
        (iv) Blended learning
        (v) Tailoring
        (vi) Training technologies
        (vii) Measurement of competencies
        (viii) Developing lesson plans
    c. What was the content and method of the student-focused exercises in which you participated?

5. **If they did not attend a SITA Ph II ASLTE MTT ask the following:**
    a. What have you been told about SITA Ph II ASLTE and its intent?

Roles and Responsibilities

6. Before we go on, I want to make sure I understand your role in revising the course. Your responses in the questionnaire indicated the following.   [**Interviewer – check response and verify with participants.]**

	Involved	Aware	Not Involved	Not involved but should have been
Stage 1. Decision-making (Course selection)				
Stage 2. Planning & Identifying Solutions (Analysis and Design)				
Stage 3. Development (Production of materials, TDC input)				
Stage 4. Implementation (Course execution/pilot course in the classroom)				
Stage 5. Sustainment				

7. Let me verify the times you specified for each stage as well.

Stage 1. Decision-making (course selection)	Date of decision: _____
Stage 2. Planning & Identifying Solutions	From _____ to _____
Stage 3. Development	Materials: From _____ to _____ Instructors prepared From _____to ____
Stage 4. Implementation (course execution)	First iteration: from _____ to _____
Stage 5. Sustainment	

Interviewer: Review the arrows the participants drew on the organizational chart to make sure your understanding of them is correct.

Before we progress to your specific role and responsibilities, we have two more questions.

8. In many cases when major changes are made within an organization, there is a "*champion*" for the change. A champion is an individual who takes the lead in conceptualizing the changes needed, monitors/reviews the progress being made, insures the right people are involved at the right times, comes up with solutions to unexpected problems, someone who is enthusiastic about the changes, is determined to have success, etc..

   a. Was (is) there such an individual within your school or CoE who could be considered a champion?
      Yes   No
      If yes, duty position _____

9. From your perspective, what are the <u>success stories</u> associated with revisions to this course? (probe, increased student proficiency, special exercises, something that solved a major training gap, something that you think should be repeated, the focus on "outcomes," tools that made the process more efficient, increased student engagement, increase in positive response from students …).

We will now ask you about your specific responsibilities in more depth.

BACKGROUND PARTICIPANT QUESTIONNAIRE

Background Questions

1. Please mark your duty position:

    _____Instructional designer

    _____Training developer

    _____Instructor/Writer

    _____Instructor

    _____Course manager

    _____Middle manager

    _____Staff and faculty

    _____Quality assurance staff

    _____Other (please write other position)_____

2. How long have you held this position? _____

3. Have you previously held any other positions in the list presented above?

    _____Yes _____No

    If yes, which ones?_____

4. If military, What is your rank? _____

    What is your branch/MOS? _____

5. Please review your organizational chart (See the last page of this questionnaire). Is this the present structure of your organization?

    _____Yes _____ No

6. To the best of your knowledge, are the identified units/agencies on this chart the ones involved in the ALM course changes?

    _____Yes _____No

7. Did you attend a SITA Ph I IDC Train the Trainer or local version in 2012?

    _____Yes _____ No _____ Which?

8. Did you attend a SITA Ph II ASLTE MTT in 2013?   _____Yes _____No

9. Did you (are you) attend a SITA Ph II ASLTE MTT Follow-on being conducted in 2014?

    ____Yes _____No

The next items address your general role in the five stages which are associated with making changes within organizations. We want to know if you were involved in each stage and the status of that stage.

Stage 1. Decision-Making (Course Selection)

1. Were you involved in making the decision regarding which course to include in SITA 2?

    _____Yes _____No

    a. If *No*, were you aware of the fact that decisions were being made?

        _____Yes _____No

    b. If *Not* involved, do you think you should have been involved?

        _____Yes _____No

(If not involved or not aware, go to questions on Stage 2)

2. Please indicate on the scale below the best description of this decision-making process.

CHANGE ACTIVITY	**Circle the cell** that best describes the decision-making stage		
Identifying the course to include in response to the SITA Phase II TRADOC Tasking Order	Candidate courses hard to identify; Decision made after much discussion and debate	Several courses immediately considered; Pros and cons weighed before final decision	Candidate course(s) easily identified. Course decision-made with little debate

3. When was this course decision made? (Month/year) _____

Stage 2: Planning and Identifying Solutions

4. Were you involved in determining/discussing the types of changes needed, what was feasible, and/or possible solutions for revising this course?

    _____Yes _____No

    a. If No, were you aware of such discussions and deliberations?

        _____Yes _____No

    b. If not involved in planning deliberations, do you think you should have been?

        _____Yes _____No

(If not involved or not aware, go to questions on Stage 3)

5. Please indicate the degree to which the following activities are(have) occurring(ed) during the process of planning for course revisions.

CHANGE ACTIVITIES	**Circle the cells** that best describe the planning stage		
Identifying revisions: Identify revisions with the selected course that need to be implemented	Issues/revisions not identified or agreed upon as the most critical to change	Issues/revisions somewhat identified and agreed upon as the most critical to change	Issues/revisions fully identified and agreed upon as the most critical to change
Identifying solutions: Determine how to make the changes/revisions to the selected course; agreement regarding solutions/changes/ strategies	Proposed solutions/changes did not match the issues that were identified; no or limited agreement currently on solutions/changes/ strategies	Proposed solutions/changes somewhat matched the identified issues; moderate agreement on solutions/changes/ strategies	Proposed solutions/changes matched/were appropriate for the identified issues; full agreement on solutions/changes/strategies

6. When did the planning process start? (Month/year)_____

7. When did the planning process stop – decisions were made regarding the issues and types of revisions? (Month/year)_____

Stage 3: Developing Course Revisions

8. Were you involved in developing the actual revisions to the course (e.g., new lesson plans, exercises, new training materials, and so on)?

    _____Yes   _____No

    a. If No, were you aware of the status of revisions? _____Yes _____No

    b. If not involved, do you think you should have been in developing course revisions?

    _____Yes   _____No

(*If not aware or not involved in developing course revisions, go to questions on Stage 4.*)

9. Please indicate the degree to which the following activities are (have) occurring(ed) during the process of developing the course revisions.

CHANGE ACTIVITIES	Circle the cells that best describe the development stage		
Course revisions: Develop all planning materials to implement solutions (e.g., course materials, POIs, lesson plans)	Have not yet developed or developed less than 70% of the course materials	Have developed drafts of a majority (70-100%) of the course materials	Have developed and finalized course material
Instructor training: Develop and execute instructor training	Have not yet developed materials for training instructors	Have developed draft materials for instructor training	Have fully developed instructor training and executed an instructor training course

10. When did the development process start? (Month/year)_____

11. When did the development process end?
    a. Materials completed (Month/year)_____
    b. Instructor training/preparation completed (Month/year)_____

12. If all revisions have not been completed, when do you estimate the course revisions will be completed? (Month/year)_____

Stage 4: Implementing/Executing the Revised Course

13. Were you involved (or will you be involved) in implementing/piloting/executing/monitoring the revised course in any way? (e.g., as an instructor, as course monitor)?

        _____Yes   _____No

    a. If No, were you aware of the implementation/execution of the new course?

        _____Yes   _____No

    b. If not involved, do you think you should have been in course implementation?

        _____Yes   _____No

(If you did not implement the course or are not aware of/involved with course execution, go to the questions on Stage 5.)

14. Please indicate the degree to which the following activities are (have) occurring(ed) regarding course implementation.

CHANGE ACTIVITIES	Circle the cells that best describe the implementation/execution stage.		
Implement change/course revisions: Execute course revisions	Have not yet implemented the revised course	Have completed one iteration of the revised course	Have completed more than one iteration of the revised course
If implemented, modify course from feedback: Collect obtain feedback from instructors and/or students and further revise the course	Have not collected feedback regarding the course revisions	Have collected course feedback but have not made additional revisions to the course	Have collected course feedback and have made additional revisions to the course

15. When was the first revised course implemented?
From (Month/year)_____ To (Month/year) _____

16. If there has been more than one course implementation/execution, list the dates of each:

From (Month/year)_____ To (Month/year) _____
From (Month/year)_____ To (Month/year) _____

17. If the revised course has not been implemented, when do you estimate the course will start?
From (Month/year)_____ To (Month/year) _____

Stage 5. Sustaining the Revised Course

By sustainment, we mean that the revised course has been implemented at least 3 times.

18. Has the revised course been implemented at least three times?

　　　　Yes 　　　　No

    a. If "*No*", do you believe you will be involved in sustaining course changes in any way?

　　　　Yes 　　　　No 　　　　Possibly

   b. If "*No*," do you believe you should be involved in sustaining course changes in any way?

　　　　Yes 　　　　No 　　　　Possibly

(If you are not involved with the sustainment stage, go to question on the next page.)

19. If the revised course has been implemented at least 3 times, have you been involved in any sustainment activities (e.g., providing continued logistical support, monitoring to see if the desired changes are still being implemented, ensuring new instructors understand how to implement course revisions, checking on student performance/outcomes, addressing issues that will improve the course)?

　　　　Yes 　　　　No

20. If you are (will be) involved in course sustainment, please indicate the degree to which the following activities are (have) occurring(ed) regarding course sustainment?

CHANGE ACTIVITIES	**Circle the cell** that best describe this stage.		
Implement Sustainment Activities Activities to ensure desired changes continue	No planning has occurred for formal sustainment actions or identifying units/individuals responsible for this stage	Appropriate agencies involved in sustainment have been identified and plans initiated	Sustainment activities are ongoing

All participants please answer the next question regardless of your role(s) in the course revisions.

21. We are interested in your interactions with other agencies or units during course revisions and implementation.

Using the diagram shown below, draw arrows to indicate these interactions.

- If the interaction was typically one-way – you initiated interactions with another agency or unit, or another agency/unit initiated interactions with you, draw a single-directional arrow.
  (Initiate or Sender) ⟶ (Receiver).

- If there was relatively constant communications between you and other organization, draw a two-headed arrow ⟷ (each initiated communications).

- If your interactions were primarily within your own unit, just circle your unit.
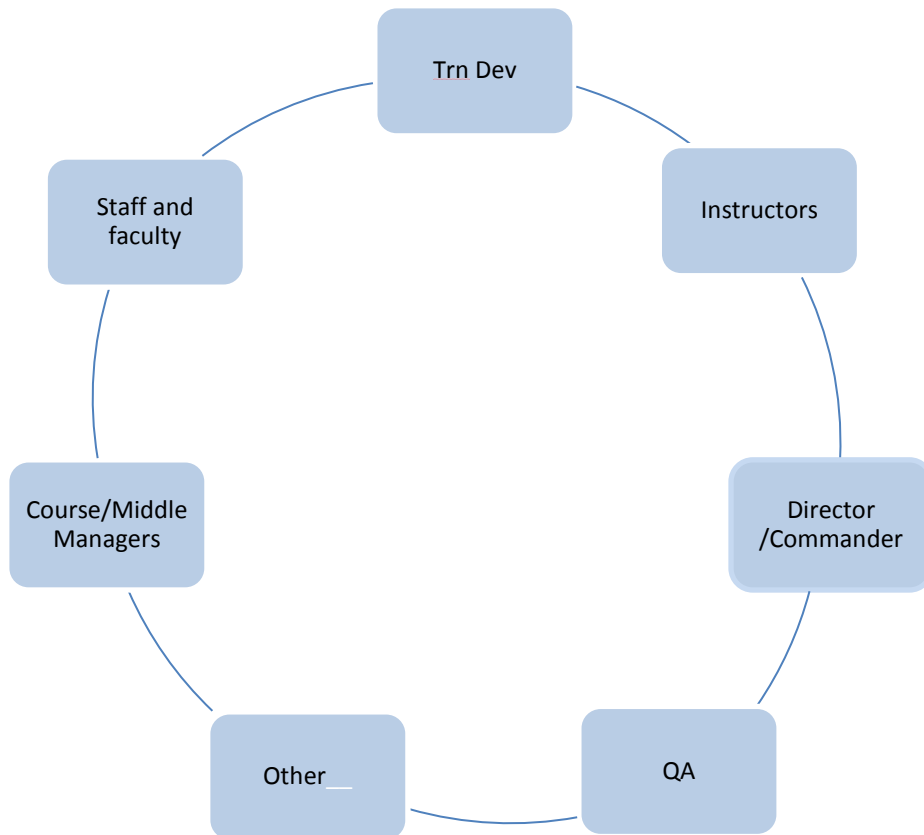
Insert School's or CoE's organizational chart on next page.

DECISION- MAKING PROCESS INTERVIEW QUESTIONS

Position_____[interviewer write in]

If you are unable to answer a question based on your experiences, simply indicate that you are not aware of what happened.

1. Describe the nature of your involvement in deciding which course should be involved in SITA 2.

2. Would you characterize the decision process as from the bottom up or the top down?
    Bottom up   Top down

3. Who else provided input to the decision? (duty positions) _____

4. Was more than one course considered?   Yes   No
    a.   If yes, how many? _____

    b.   Were several meetings or briefings held in the process of making a decision?   Yes No

5. Was it relatively easy to reach a final decision / recommendation (consensus easily achieved) or were there strong arguments for other courses? _____
    Easy   Strong Arguments for others

6. What were the primary reasons for selecting this course? _Probe_
        a.   New equipment in the field that needed updated training (describe)
        b.   A change in doctrine (describe)
        c.   Feedback +from the field regarding needed changes to improve graduate proficiency (describe feedback)
        d.   Desire to include technology (describe)
        e.   To address a training gap (describe gap)
        f.   Course was partially modified before SITA 2
        g.   Course was on the cycle to be revised/updated
        h.   Costs were envisioned as relatively low (e.g., no special contracts, equipment required)
        i.   Manpower required to make the change were not substantial
        j.   Changes were needed to shorten the training time
        k.   Other ____

7. What were the primary reasons for rejecting other courses that were considered?

8. Who made the final decision on the course? Name the duty position _____

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PLANNING AND IDENTIFYING SOLUTIONS INTERVIEW QUESTIONS

Position_____ (Filled in by interviewer)

You stated that you were involved with planning the revisions to the course. We will now be asking more specific questions about your role.

In the planning stage, the specific desired changes to the course(s) are examined and determined, priorities are made, potential solutions/alternatives by which the desired changes could be implemented are identified, a plan for achieving the desired end state is established, etc.

Again, if you cannot answer a question because of your experiences, simply indicate that you are not aware of what happened.

1. How early was your involvement with the planning process?

       ___At the start
       ___When about 1/3rd of the planning was done
       ___When about half the planning was done
       ___In the last half of the planning cycle

       In retrospect, was this the best time for you to be involved or would another time have been better? _____

2. To the best of your knowledge, did the planning occur prior to developing the revisions, or did both stages occur simultaneously, that is in conjunction with each other?

       __Planning was prior to development
       __Planning done in conjunction with developing changes
       __Planning occurred prior to development, but course development activities impacted
          or changed the plan as well
       __Do not know
       Other _____

3. Describe the nature of your involvement in planning the changes to the course.

  _____

4. How many lessons are in the course? _____

5. Was the plan to modify all of these or only some? _____All ___ Some -how many?_____

6. Were priorities assigned to the modifications?

7. Who else was involved in the planning process?
      a. Number _____
      b. Duty positions _____

8. What guidance did you follow when planning the course changes?

    Probe: SITA 1, SITA2, Command Guidance, the TRADOC ALM Pam, Other?_____

9. Who approved the final plan? (duty position) _____

10. Please describe how you interacted with developers during the planning stage.

11. Please describe how you interacted with instructors during the planning stage.

12. What were the procedures for reporting to more senior leaders on the status of the course revision plans?

    _____

Possible Course Changes

Next, please go to the <u>questionnaire.</u>

13. In order for us to get a "big picture" of the major areas in which changes were planned, please examine the list on the first page of the questionnaire. Indicate which areas apply to your course. Also, please add any other areas in which major changes were planned.

    __Course content - the subject matter
    __Tailored training to better address individual differences
    __Means of delivering the training/instruction (e.g., add simulations, less PowerPoint)
    __Soldier competencies per the Army Learning Model
    __Learner-centered and/or problem solving activities/exercises/scenarios
    __Principles of learning to enhance learning, retention, and transfer to the field
    __Other _____

    +--+
    | Interviewer: Do not progress to the next question until the individual has |
    | completed the checklist in the questionnaire. |
    +--+

14. Now we would like you to consider the planning process for the course changes. Please turn to the second page of your questionnaire and indicate on the six scales how the changes were viewed by your team. Your rating should reflect all the planned changes.

Interviewer: Wait until the individual has completed the ratings prior to progressing to the next questions.

Dimension	**Circle the cell** that best describes each dimension		
Degree of change	Minor course revisions: slight adjustments to the current lesson plans	Moderate course revisions: Additions or revisions of student exercises, slight changes to instructor training, etc.	Large-scale course revisions: Re-write of the POI and lesson plans, extensive instructor training
Difficulty of making the changes/course revisions	Simple tasks to make changes/course revisions (e.g., low fidelity, no content change)	Moderately difficult tasks to make changes/course revisions (e.g., changes to current content, changes to existing software)	Extremely difficult/very complex to make changes/course revisions (e.g., new software development, all new content/lesson plans)
Change in Instructor behavior/procedures	Minor and few changes needed in instructional techniques from the prior course; no new instructor training (e.g., removal of PowerPoint slides, more repetition of exercises to enhance learning and retention)	Somewhat difficult for the instructor. Most desired changes built upon instructional techniques previously used. Instructor training needed for some blocks of instruction (e.g., desk-top simulations or computer-based training to virtual simulations, insertion of more complex problem-solving exercises).	Substantial changes in instructional techniques; training required to prepare instructors for most of the course (e.g., high direct instruction to primarily facilitator, focus on technical skills only to also focusing on decision-making)
Time requirement	No additional time required to make the changes/course revisions	Moderate amount of time needed to make changes/course revisions (e.g., a few hours a week)	Extreme amount of time needed to make changes/course revisions (e.g., entire days per week spent making revisions)
Manpower requirement	Changes can be/were made with current personnel (e.g., 1-2 people)	Some additional manpower was needed to make the course changes/revisions (e.g., accomplished changes by adjusting personnel in-house)	Much additional manpower needed to make the changes/course revisions (e.g., had to hire outside personnel with specific skills to accomplish changes such as software developers)
Workload	Workload of individuals remained the same during the planning process	Workload of individuals increased moderately during the planning process.	Workload of individuals increased substantially during the planning process.
Costs	Inexpensive to make changes/course revisions (e.g., no new costs to make changes)	Somewhat costly to make changes/course revisions (e.g., required some additional costs to make planned changes/course revisions)	Very costly to make changes/course revisions (e.g., required much additional funds to make the changes/course revisions)

The next questions are on specific types of changes that could have been planned for your course. If a change was not planned, let us know. Similarly if you are not aware of some details of the planning process, simply indicate that you are not aware.

Course Content Questions

15. Did the plan involve any modifications to the course content/subject matter (e.g., deletion of content, addition of new content, updating of content)?   Yes   No

    If "yes", explain why changes were perceived as desirable or needed. _____

16. Also please tell us exactly what subject matter or content was planned to be changed and the number of lessons identified to be changed in the plan.
    a. Why _____
    b. Content to be changed _____
    c. Number of lessons affected _____

Tailoring Training

One of the concepts stressed in the Army Learning Model is that "learning should be tailored to the individual learner's experience and competence level based on the results of a pre-test and/or assessment."

17. Did the plan include suggestions to instructors or training developers for how to account for differences in Soldier competence or experience (i.e., tailoring training)? Yes   No

    a. Who made this decision? (duty position) _____
    b. Did the plan include developing tests of knowledge as a means of identifying critical individual differences?   Yes   No
        If yes, was the intent to identify individuals who might need assistance OR those who needed to be challenged more?

    c. Were there other procedures in the plan for addressing individual differences and tailoring the instruction?

        Yes   No
        If Yes, describe the procedures

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Methods of Instructional Delivery

18. The Army Learning Model cites many methods by which courses can be conducted. Please complete the questions on next page of the <u>questionnaire </u>on Methods of Instructional Delivery. Indicate the changes included in the plan for your course.

> **Interviewer: After the individuals have completed the questions, IF the plan was to insert any new technology, have them indicate what the technology was to replace. Probe to determine why these changes were planned.**
> **Also if they revised training device exercises or prerequisite lessons, probe to determine the type of modification planned.**

Methods of Instructional Delivery	In course prior to revision?	Planned to change?	What type of change was planned – the intent?	Comments
Instructor Led	Y N	Y N	More / Less	
Power-point slides	Y N	Y N	More / Less	
Hands-on exercises with equipment	Y N	Y N	More / Less	
Problem-solving exercises (not technology-based)	Y N	Y N	More exercises More with increased difficulty Fewer	Describe content variations.

Technology-based
 	
  Blended Learning
  Simulations/ Gaming
  Mobile applications
  CBT/IMI lessons
  Intelligent tutors
	
	Y N
	Y N
	Y N
	Y N
	Y N
		
		Y N
		Y N
		Y N
		Y N
		Y N
			
			New / revised– more/ less
			New / revised– more/ less
			New / revised– more / less
			New / revised- more/ less
			New / revised- more/ less
				If new, what was the technology to replace?
				_____
				_____
				_____
				_____
				_____

Training devices	Y N	Y N	New / revised- more/ less	 _____
Prerequisite lessons prior to course (distance learning)	Y N	Y N	New / revised- more/ less	
Other_____				

19. Who made the decisions for these changes (duty position)? _____

20. Was there a consensus on the planned changes which you just marked? Yes   No

     If there was little to no agreement, how was an agreement reached?

21. What were the reasons of inclusion, rejection, etc.?

Soldier Competencies

The Army Learning Model states that a major learning outcome is to develop Soldier competencies.

These competencies are listed on next page of the questionnaire.

22. Please check the Soldier competencies selected for the revised course

Check if selected	Competencies
	Tactical and technical competence
	Character and accountability
	Comprehensive fitness
	Adaptability and Initiative
	Teamwork and collaboration
	Lifelong learner (includes digital literacy)
	Communication and engagements (oral, written, negotiation)
	Critical thinking and problem solving
	Cultural and joint interagency, intergovernmental, and multinational competence

Interviewer. After the individual has completed marking the competencies on the questionnaire, ask the following questions.

23. Why were these selected?_____

24. Why were the others rejected?_____

25. Was there a consensus on which to include?_____

26. Who made these decisions (duty position) and when?_____

27. What was strategy or plan for how the selected competencies could be integrated into the revised course?_____

_____

ALM Concepts

The next questions are on other concepts in the Army Learning Model which you may have incorporated in your revised course.

28. Did the plan include revising **course outcome statements**? Yes   No
   a. If so, were these outcome statements revised during the planning stage or during development of the revised lesson plans / POI?
      Planning stage   Development stage
   b. Who developed the course outcome statements? (Duty position)_____

29. The Army Learning Model stresses creating **learner-centered activities**. Please describe the plan for these activities._____

30. The Army Learning Model also stresses the importance of **problem-solving events and activities** which foster the ability to solve problems, to think, to adapt, to take initiative, etc. What was the plan for achieving these outcomes? _____

31. Did the plans for **learner-centered activities and/or problem-solving events** include changes in the way the instructor interacted with students?   Yes   No

   a. If Yes – what was the intent?_____
   b. Did you envision that these changes in the instructors' role would be sufficiently substantial that instructors would require instructor training or special preparation? Yes No

32. Were there any plans for making the training more **relevant to the field**, to the Soldier's future duty assignment? Yes   No

     If so, please describe

33. Were there any plans for changing or enhancing **feedback** to the students? For example, AARs or, feedback on simulation exercises?
   a. AARs?___
   b. More feedback on performance due to more exercises? ____
   c. More individualized feedback?_____

34. What were the plans for changing the course to **improve retention** of skills and concepts covered in the course?

Manpower and Logistics

35. What was the perceived impact of the plan on **training developers**? (e.g., obtain additional training developers to handle the work load, obtain training developers with new skills; provide current developers with more training/skills?) Describe.

36. What was the perceived impact of the plan on **instructors**? Describe.

37. Overall, what were the plans for **preparing instructors** for the revised courses?

38. Did the plans cover **potential logistical impacts** of the changes? If additional or new impacts, what was the solution on how these impacts could be addressed? Describe.

39. Did the plans alter any **time requirements** for the course? Did the course require more or less time overall? Within each day? Less synchronous and more asynchronous time?

40. **Interviewer: review the manpower and time requirement responses in the questionnaire. Ask the interviewees to further explain their responses.**

Summary Questions

41. What did you learn in the process of planning for course revisions and identifying potential solutions?_____

42. What were the best decisions or recommendations you (or others) made?_____

43. What would you change if you were involved in planning revisions for another course?_____

44. What other comments do you have on the planning process? _____

PARTICIPANT QUESTIONNAIRE: PLANNING FOR REVISIONS
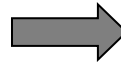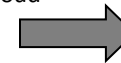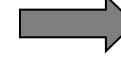
Possible Course Changes

1. Check the areas in which changes were planned for the course. Also, add any other areas in which major changes were planned.

   __Course content - the subject matter
   __Tailored training to better address individual differences
   __Means of delivering the training/instruction (e.g., add simulations, less PowerPoint)
   __Soldier competencies per the Army Learning Model
   __Learner-centered and/or problem solving activities/exercises/scenarios
   __Principles of learning to enhance learning, retention, and transfer to the field
   __Other _____

Initial Planning

    2.   How were changes viewed by your team in the planning process?

Dimension	Circle the cell that best describes each dimension		
Degree of change	Minor course revisions: slight adjustments to the current lesson plans	Moderate course revisions: Additions or revisions of student exercises, slight changes to instructor training, etc.	Large-scale course revisions: Re-write of the POI and lesson plans, extensive instructor training
Difficulty of making the changes/course revisions	Simple tasks to make changes/course revisions (e.g., low fidelity, no content change)	Moderately difficult tasks to make changes/course revisions (e.g., changes to current content, changes to existing software)	Extremely difficult/very complex to make changes/course revisions (e.g., new software development, all new content/lesson plans)
Change in Instructor behavior/procedures	Minor and few changes needed in instructional techniques from the prior course; no new instructor training (e.g., removal of PowerPoint slides, more repetition of exercises to enhance learning and retention)	Somewhat difficult for the instructor. Most desired changes built upon instructional techniques previously used. Instructor training need for some blocks of instruction (e.g., desk-top simulations or computer-based training to virtual simulations, insertion of more complex problem-solving exercises).	Substantial changes in instructional techniques; training required to prepare instructors for most of the course (e.g., high direct instruction to primarily facilitator, focus on technical skills only to also focusing on decision-making)
Time requirement	No additional time required to make the changes/course revisions	Moderate amount of time needed to make changes/course revisions (e.g., a few hours a week)	Extreme amount of time needed to make changes/course revisions (e.g., entire days per week spent making revisions)
Manpower requirement	Changes can be/were made with current personnel (e.g., 1-2 people)	Some additional manpower was needed to make the course changes/revisions (e.g., accomplished changes by adjusting personnel in-house)	Much additional manpower was needed to make the changes/course revisions (e.g., had to hire outside personnel with specific skills to accomplish the changes such as software developers)
Workload	Workload of individuals remained the same during the planning process	Workload of individuals increased moderately during the planning process.	Workload of individuals increased substantially during the planning process.
Costs	Inexpensive to make changes/course revisions (e.g., no new costs to make changes)	Somewhat costly to make changes/course revisions (e.g., required some additional costs to make planned changes/course revisions)	Very costly to make changes/course revisions (e.g., required much additional funds to make the changes/course revisions)

Additional Manpower Questions

3. Please respond to the following questions regarding manpower requirements:
   a. How many people were *initially* involved in planning the revisions?_____
   b. What was the *total* number of people involved in planning the revisions?_____
   c. Did the people involved in the initial planning process have the appropriate skills to plan for the revisions? _____Yes _____No
      i. If *no*, what additional skills were needed to plan for the revisions?_____

Methods of Instructional Delivery

4. The Army Learning Model cites many methods by which courses can be conducted. Please answer the questions in the table below regarding the plans for changing the methods of instructional delivery in your course.

Circle Y or N, More or Less, New or revised as appropriate. If "revised" is circled in the column, then circle either more or less which follows.

Methods of Instructional Delivery	In course prior to revision?	Planned to change?	What type of change was planned – the intent?
Instructor led	Y N	Y N	More / Less
PowerPoint slides	Y N	Y N	More / Less
Hands-on exercises with equipment	Y N	Y N	More / Less
Problem-solving exercises (not technology-based)	Y N	Y N	__More exercises __More with increased difficulty __Fewer
Technology-based:			
Blended Learning	Y N	Y N	New / revised– more/ less
Simulations/ Gaming	Y N	Y N	New / revised– more/ less
Mobile applications	Y N	Y N	New / revised– more / less
CBT/IMI lessons	Y N	Y N	New / revised- more/ less
Intelligent tutors	Y N	Y N	New / revised- more/ less
Training devices	Y N	Y N	New / revised- more/ less
Prerequisite lessons prior to course (distance learning)	Y N	Y N	New / revised- more/ less
Other____			

Soldier Competencies

5. Please respond if the competency was selected for integration into the revised course.

Check (x) if the competency was selected for integration into the revised course	Soldier Competencies
	Tactical and technical competence
	Character and accountability
	Comprehensive fitness
	Adaptability and Initiative
	Teamwork and collaboration
	Lifelong learner (includes digital literacy)
	Communication and engagements (oral, written, negotiation)
	Critical thinking and problem solving
	Cultural and joint interagency, intergovernmental, and multinational competence

DEVELOPING COURSE REVISIONS INTERVIEW QUESTIONS

Position_____ (Filled in by interviewer)

You stated that you were involved with developing or monitoring/supervising course revisions. We will now ask more specific questions about your role.

If you cannot answer a question because of your experiences, simply indicate that you are not aware of what happened.

1. To the best of your knowledge, did the planning occur prior to developing the revisions, or did both stages occur simultaneously, that is in conjunction with each other?

    _____Planning was prior to development
    _____Planning done in conjunction with developing changes
    _____Planning occurred prior to development, but course development activities impacted or
             changed the plan as well
    _____Do not know
    _____Other _____

2. Were you informed of the plan? Yes   No

3. When we talk about developing course revisions, we assume developers were provided guidance from those who did the planning and/or from key decision-makers. We understand that guidance could have been general or very specific. But we assume that you understood the scope of your responsibilities and the product that decision-makers and planners desired.

    Describe the nature of your involvement in developing changes to the course._____

Interviewer:
The first set of general questions which follows is for <u>training developers</u>.
The second set is for <u>course monitors/managers</u>.
The third set is for <u>both training developers and course monitors/managers</u>.

Training Developers

1. When you made revisions to the course, how many lessons did you work on?

2. Who else was involved in the development process?

    a. Number_____
    b. Duty positions _____
    c. Did you work collaboratively with others or primarily on your own?

3. What guidance did you follow when making the course changes? *Probe*:

    a. SITA 1
    b. SITA2
    c. Command Guidance
    d. TRADOC ALM Pam
    e. Course manager
    f. Other?_____

4. Did you use the Training Development Capability (TDC) to design and develop the course revisions?
    _____Yes _____No

    a. If yes, can you describe how you used the tool to design and develop the course revisions?

    b. What is your perception of the tools' capabilities in meeting the requirements for the course revisions?

5. Did you receive any special training to enable you to work more efficiently or better on changes to this course? _____Yes _____No

    If yes, describe the training

6. How much total time do you estimate you spent making revisions to the course?

7. Were there any unexpected costs?

Course Monitors/Managers

1. When you monitored the development process, how many lessons were revised?

2. How many individuals were involved in the development process?

3. Was this adequate to handle the workload?   Yes   No

    a. If *No*, were you able to obtain additional individuals?   Yes   No

4. Did each person have the same degree of responsibility, or were a few individuals responsible for most of the changes?

5. Did the training developers working on this course have the appropriate skill sets to accomplish the changes?   Yes No

    a. If *Yes*, what were these skill sets?
    b. If *No* - not all skills existed, what other skills were required or needed to be improved?
        i. How was this problem resolved?
        ii. Was additional training provided to the developers or were you able to obtain others with the needed skills?

6. What guidance did you (or others) give to developers? _____

7. Did your involvement in the course changes impact your workload? Yes No

    If yes, please describe.

> **Interviewer: The next questions should be asked of both developers and individuals who monitored the course development process.**

1. Please describe how you interacted with planners during the development stage.

2. Please describe how you interacted with instructors during the development stage.

3. What were the procedures for reporting to more senior leaders on the status of the course revisions?

Possible Course Changes

4. In order for us to understand the major areas in which changes or revisions were made in the course, please examine the list in the questionnaire and indicate the areas in which you were involved. Also, please indicate any other major areas in which you worked or monitored during the development process.
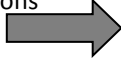
> **Interviewer:**
> - **Have developers answer questions A and B only.**
> - **Have course monitors/managers answer questions A and C only.**
> - **Indicate that "DNK" stands for "do not know" whether an area was in the plan.**
> - **Do not progress to the next question until the checklist is completed.**

AREA	Developers and Monitors	Developers Only	Monitors Only
	A) Was this area in the plan?	B) Did you work in this area?	C) Did you monitor work in this area?
a. Course outcome statements	Y N DNK	Y N	Y N
b. Soldier competencies per the Army Learning Model	Y N DNK	Y N	Y N
c. Course content - the subject matter	Y N DNK	Y N	Y N
d. Tailored training to better address individual differences	Y N DNK	Y N	Y N
e. Means of delivering the training/instruction (e.g., add simulations, less PowerPoint)	Y N DNK	Y N	Y N
f. Learner-centered and/or problem solving activities/exercises/scenarios	Y N DNK	Y N	Y N
g. Principles of learning to enhance learning, retention, and transfer to the field	Y N DNK	Y N	Y N
h. Other	Y N DNK	Y N	Y N

5. As a developer or an individual monitoring/responsible for course revisions, please indicate on the 7 scales in the <u>questionnaire</u> how the changes were viewed by your team. Your rating should reflect all the planned changes of which you were aware.

Interviewer: Do not progress to the next questions until the ratings are complete.

Dimension	**Circle the cell** that best describes each dimension		
Degree of change	Minor course revisions: slight adjustments to the current lesson plans	Moderate course revisions: Additions or revisions of student exercises, slight changes to instructor training, etc.	Large-scale course revisions: Re-write of the POI and lesson plans, extensive instructor training
Difficulty of making the changes/course revisions	Simple tasks to make changes/course revisions (e.g., low fidelity, no content change	Moderately difficult tasks to make changes/course revisions (e.g., changes to current content, changes to existing software)	Extremely difficult/very complex to make changes/course revisions (e.g., new software development, all new content/lesson plans)
Change in Instructor behavior/ procedures	Minor and few changes needed in instructional techniques from the prior course; no new instructor training (e.g., removal of PowerPoint slides, more repetition of exercises to enhance learning and retention)	Somewhat difficult for the instructor. Most desired changes built upon instructional techniques previously used. Instructor training needed for some blocks of instruction (e.g., desk-top simulations or computer-based training to virtual simulations, insertion of more complex problem-solving exercises).	Substantial changes in instructional techniques; training required to prepare instructors for most of the course (e.g., high direct instruction to primarily facilitator, focus on technical skills only to also focusing on decision-making)
Time requirement	No additional time required to make the changes/course revisions	Moderate amount of time needed to make changes/course revisions (e.g., a few hours a week)	Extreme amount of time needed to make changes/course revisions (e.g., entire days per week spent making revisions)
Manpower requirement	Changes can be/were made with current personnel (e.g., 1-2 people)	Some additional manpower was needed to make the course changes/revisions (e.g., accomplished changes by adjusting personnel in-house)	Much additional manpower was needed to make the changes/course revisions (e.g., had to hire outside personnel with specific skills to accomplish the changes such as software developers)
Workload	Workload of individuals remained the same during the planning process	Workload of individuals increased moderately during the planning process.	Workload of individuals increased substantially during the planning process.
Costs	Inexpensive to make changes/course revisions (e.g., no new costs to make changes)	Somewhat costly to make changes/course revisions (e.g., required some additional costs to make planned changes/course revisions)	Very costly to make changes/course revisions (e.g., required much additional funds to make the changes/course revisions)

The next questions are on specific types of changes that could have been made in your course. If a change was not made, let us know. Similarly if you are not aware of some details of the development process, simply indicate that you are not aware.

- **Interviewer (general guidance): If an individual did NOT have a role in making/= or monitoring a specific type of change, progress to the next set of questions.**
- **As both developers and individuals monitoring/responsible for the changes will be interviewed, the words "monitored" or "monitoring" have been parenthetically inserted in some questions to use when interviewing these individuals.**
- **There are other places in the interview where questions are phrased differently for developers and monitors or where separate sets of questions are asked.**

Course Outcome Statements

6. Did you participate in generating (*or monitoring*) course outcome statements? Yes   No

    a. If _Yes_, please describe the process by which this was accomplished.
    b. If _No_, please indicate who did, if known to you (duty position) _____
    c. Were you provided the course outcome statements prior to any development activity? Yes   No

Soldier Competencies

The Army Learning Model states that a major learning outcome is to develop Soldier competencies.
Please go to the <u>questionnaire</u> and complete the questions on Soldier Competencies.

7. Have developers answer questions A and B. Have course monitors/managers answer questions A and C.

COMPETENCY	Developers/ Monitors	Developers Only	Monitors Only
	A) Was this competency in the plan?	B) Did you work on integrating this competency into the course?	C) Did you monitor work integrating this competency into the course?
a. Tactical/Technical Competence	Y N DNK	Y N	Y N
b. Character/Accountability	Y N DNK	Y N	Y N
c. Comprehensive Fitness	Y N DNK	Y N	Y N
d. Adaptability/Initiative	Y N DNK	Y N	Y N
e. Teamwork/Collaboration	Y N DNK	Y N	Y N
f. Lifelong learner (includes digital literacy)	Y N DNK	Y N	Y N
g. Communication/ Engagements (oral, written, negotiation)	Y N DNK	Y N	Y N
h. Critical thinking/ Problem solving	Y N DNK	Y N	Y N
i. Cultural/Joint interagency, intergovernmental, and multinational competence	Y N DNK	Y N	Y N

8. How were lesson plans/activities created or modified to integrate competencies into the course?   Please describe for each competency you identified in the questionnaire.

9. What challenges were encountered when integrating competencies in the lesson plans?

10. Were student measures or assessments of these competencies developed?   Yes   No

   a.   If *Yes*, describe the nature of the test/assessment.
   b.   Can you share a specific example with us?

11. Who reviewed these products; revised/new lesson plans? (duty position) _____

12. Who approved these products; revised/new lesson plans? (duty position) _____

Course Content

13. You indicated you were involved with changes to the course content, the subject matter. Tell us exactly what subject matter or content was changed and the number of lessons identified to be changed in the plan.

      a. Why _____
      b. Content to be changed _____
      c. # of lessons affected _____

14. Describe what was involved in making changes to the content. *Probe:*

      a. Research new/appropriate material
      b. Talk to SMEs
      c. Generate new lesson plans with new exercises, instructional techniques, etc.
      d. Develop supporting materials –based on technology or non-based on technology
      e. Develop new tests for assessing Soldier performance
      f. Other _____

15. How was the new content or subject matter validated?

16. How much time did this validation require?

17. Who reviewed the revised/new lesson plans? (duty position) _____

18. Who approved the revised/new lesson plans? (duty position) _____

Tailoring Training

19. Did you create [*or monitor the creation of*] "tests" or other assessments to identify critical individual differences related to specific blocks of instruction (e.g., prior knowledge regarding subject matter)? Yes   No

    If Yes, for which blocks of instruction did you create the tests?

20. Did you develop any support materials or instructional techniques intended to facilitate the instructor's ability to tailor training [or monitor this process]? Yes   No

If Yes, describe?

21. How many developers were involved in these changes?

22. How much time was required?

    a.   Was this time sufficient?

23. What challenges did this change present?

24. Who reviewed the work on tailoring the training? (duty position) _____

25. Who approved the work on tailoring the training? (duty position) _____

<u>Methods of Instructional Delivery</u>

Interviewer: The Army Learning Model cites many methods by which courses can be conducted. Please examine the table in the <u>questionnaire </u>and answer the questions on methods of instructional delivery. List any other methods that were changed as well.

26. Training developers answer questions A and B. Monitors answer questions A and C.

METHODS OF INSTRUCTIONAL DELIVERY	Developers & Monitors A) Was this area in the plan?	Developers Only B) Did you work on this area?	Monitors Only C) Did you monitor this area?
a. Instructor led	Y N DNK	Y N	Y N
b. PowerPoint slides	Y N DNK	Y N	Y N
c. Hands-on exercises with equipment	Y N DNK	Y N	Y N
d. Problem-solving exercises (not technology-based)	Y N DNK	Y N	Y N
e. Training devices	Y N DNK	Y N	Y N
f. Prerequisite lessons prior to course (distance learning)	Y N DNK	Y N	Y N
Technology-based			
g. Blended Learning	Y N DNK	Y N	Y N
h. Simulations/ Gaming	Y N DNK	Y N	Y N
i. Mobile applications	Y N DNK	Y N	Y N
k. CBT/IMI lessons	Y N DNK	Y N	Y N
l. Intelligent tutors	Y N DNK	Y N	Y N
m. Other____	Y N DNK	Y N	Y N

Interviewer: The first set of questions on Methods of Instructional Delivery is for Training Developers and the second set of questions is for Course Monitor/Managers.

Training Developers Only: (Methods of Instructional Delivery)

27. Describe what you did in each area you marked on the questionnaire (e.g., develop simulation exercises", create prerequisite lessons ...).
    a. Were you responsible for revising the associated lesson plans as well?   Yes   No
    b. ***Probe to get a good picture of responsibilities and the process.***

28. If the plan included the generation of new scenarios/exercises, can you describe a few of these that were created?
    a. How did you obtain the content to develop the scenarios/exercises?
    b. How was the content validated?

29. Did you work with someone else when making these changes? _____

30. How much time was required? _____
    a. Was this time sufficient? _____

31. What challenges did these changes present? _____

32. Who reviewed your products; revised/new lesson plans? (duty position) _____

33. Who approved your products; revised/new lesson plans? (duty position) _____

Monitors or Course Managers Only (Methods of Instructional Delivery)

34. Describe your role in each of the areas you just identified on the questionnaire.

Both Developers and Monitors – Army Learning Concepts

35. The next questions are on other concepts in ALM which may have been incorporated in the revised course. Examine the areas listed in the <u>questionnaire</u> and indicate your involvement. Developers answer A and B. Monitors answer B and C.

AREA	Developers/ Monitors	Developers Only	Monitors Only
	A) Was this area in the plan?	B) Did you work in this area?	C) Did you monitor work in this area?
a. Learner-centered activities	Y N DNK	Y N	Y N
b. Problem-solving events and activities (foster ability to solve problems, to think, to adapt, to take initiative, etc.)	Y N DNK	Y N	Y N
c. Making the course more relevant to the field (to Soldier's future duty assignment)	Y N DNK	Y N	Y N
d. Changing or enhancing feedback to students	Y N DNK	Y N	Y N
e. Techniques/Procedures to improve the retention of skills or knowledge of course content	Y N DNK	Y N	Y N

Interviewer: If the individual was NOT involved in a specific development activity, go to questions on the next area.

Learner-centered Activities

36. Did you receive any guidance other than the MTTs in how to create student-focused activities? Yes No

37. Can you provide examples of learner-centered learning activities that you created (*that were created by developers*)?

38. Were there models from other courses that helped in developing these activities? Yes No

39. Did the learner-centered activities involve a major change in the way the instructor presented the instruction? Yes No
    a.   If Yes, please describe.

40. Did any of the techniques you developed [*monitored*] involve what is called scaffolding, whereby the amount of instructor support is typically provided at first, then modified and gradually removed according to the needs of the learner? Yes No
    a. Can you provide any examples of this?

Problem-solving Events and Activities

41. Did you receive any guidance other than the MTTs in how to create problem-solving events and activities? Yes   No

42. How did you redesign the course to accomplish this intent?   [*For monitors, ask: how was the course redesigned to accomplish this intent?*]

43. Can you provide examples of the problem-solving events and activities that you *(were)* created?

44. Did they progress from basic situations to more complex situations? Yes No

45. Did you design (*review*) any lessons or activities where the students had to solve problems on their own? Yes No

46. Were there any models from other courses that helped in developing these activities? Yes No

47. What challenges did you face in developing these revised lesson plans? [**For monitors ask: what challenges did training developers face in developing these revised lesson plans***?]*

Learner-centered Activities and/or Problem-solving Events

48. Did the learner-centered activities and/or problem-solving events on which you worked [*monitored*] impact the pattern of instructor-student interaction? Yes   No   Please describe

    a. Mode of instructor-student interaction (e.g., a change from large group to small group)
    b. Peer-to-peer instruction or team based interactions with less direct instructor guidance
    c. More independent study/work/presentations by students
    d. Instructor role changing to be a facilitator

49. After the lesson plans/activities were developed, did you view the changes in instructor-student interaction as sufficiently substantial that they would require instructor training?

    a. If yes, please describe the nature of the instructor training.

Relevance of Course to the Field (to Soldier's future duty assignment)

50. Please describe how the lessons plans were changed to make them more relevant to the field, to the Soldier's future duty assignment? Please provide examples of this.

Feedback to Students

51. In what ways did you change or enhance feedback to students in the lesson plans? Please describe the type of feedback techniques you incorporated into the revised lesson plans. *Probes:*
    a. AARs?
    b. More feedback on performance due to more exercises?
    c. More individualized feedback?

Improving Retention of Skills and Knowledge

52. What techniques, activities, or procedures did you incorporate in the course that would improve retention of skills or knowledge of the concepts and principles covered in the course? Please provide some examples.

Skills Necessary to Make the Course Changes: For Training Developers Only

53. As a training developer, what were the primary skills you found valuable in making changes to the course?

54. Do you feel that changes could have been made better or faster if you had additional skills? If so, what are they?

Resources: For Course Monitors/Managers Only

55. We are also interested in your estimates of the resources required to make changes in your course. On the last two pages of the questionnaire, we ask you to provide estimates of manpower and time requirements. Please complete it based on your experiences with the course and what you have observed.

For Both Training Developers and Course Monitors/Managers

56. Considering the course revisions that were made, do you think the set of skills and capabilities required of training developers should be expanded OR do you think a team is needed with the appropriate balance of skills? Please describe.

57. What, if any, unexpected logistical issues were identified during the process of revising the course and developing/revising lesson plans?

58. How are these lessons learned applicable to other courses that may be revised in your school?

59. What did you learn in the process of revising this course that you would repeat?

60. What would you change?

61. What were the best products you produced (or that were produced)?

62. What recommendations do you have for other schools and/or for similar courses?

63. Do you have any additional comments to make regarding the development process?

PARTICIPANT QUESTIONNAIRE: DEVELOPING REVISIONS

1. **Duty position:** _____

2. **Major Course Changes**

All individuals answer "A": To the best of your knowledge, *please circle* your response to indicate which areas were addressed in the plan to change/revise the course.

Training Developers also answer "B": *Please circle* your response to indicate the major areas in which you developed changes to the course. Describe any other major areas in which you worked.

Course Monitors also answer "C": *Please circle* your response to indicate the major areas that you monitored.

The "DNK" under "A" stands for "Do Not Know" – that is, you do not know whether the area was in the plan.

AREAS OF REVISIONS/CHANGES	Developers and Monitors	Developers Only	Monitors Only
	A) Was this area in the plan?	B) Did you work in this area?	C) Did you monitor work in this area?
a. Course outcome statements	Y N DNK	Y N	Y N
b. Soldier competencies per the Army Learning Model	Y N DNK	Y N	Y N
c. Course content - the subject matter	Y N DNK	Y N	Y N
d. Tailored training to better address individual differences	Y N DNK	Y N	Y N
e. Means of delivering the training/instruction (e.g., add simulations, less PowerPoint)	Y N DNK	Y N	Y N
f. Learner-centered and/or problem solving activities/exercises/scenarios	Y N DNK	Y N	Y N
g. Principles of learning to enhance learning, retention, and transfer to the field	Y N DNK	Y N	Y N
h. Other: (*please write in area*)	Y N DNK	Y N	Y N

3. How were changes viewed by your team during development?

Dimension	Circle the cell that best describes each dimension		
Degree of change →	Minor course revisions: Slight adjustments to the current lesson plans	Moderate course revisions: Additions or revisions of student exercises, slight changes to instructor training.	Large-scale course revisions: Re-write of the POI and lesson plans, extensive instructor training
Difficulty of making the changes/course revisions →	Simple tasks to make changes/course revisions (e.g., low fidelity, no content change)	Moderately difficult tasks to make changes/course revisions (e.g., changes to current content, changes to existing software}	Extremely difficult/very complex to make changes/course revisions (e.g., new software development, all new content/lesson plans)
Change in Instructor behavior/ procedures →	Minor and few changes needed in instructional techniques from the prior course; no new instructor training (e.g., removal of PowerPoint slides, more repetition of exercises to enhance learning and retention)	Somewhat difficult for the instructor. Most desired changes built upon instructional techniques previously used. Instructor training need for some blocks of instruction (e.g., desk-top simulations or computer-based training to virtual simulations, insertion of more complex problem-solving exercises).	Substantial changes in instructional techniques; training required to prepare instructors for most of the course (e.g., high direct instruction to primarily facilitator, focus on technical skills only to also focusing on decision-making)
Time requirement →	No additional time required to make the changes/course revisions	Moderate amount of time needed to make changes/course revisions (e.g., a few hours a week)	Extreme amount of time needed to make changes/course revisions (e.g., entire days per week spent making revisions)
Manpower requirement →	Changes can be/were made with current personnel (e.g., 1-2 people)	Some additional manpower was needed to make the course changes/revisions (e.g., accomplished changes by adjusting personnel in-house)	Much additional manpower was needed to make the changes/ course revisions (e.g., had to hire outside personnel with specific skills to accomplish the changes such as software developers)
Workload →	Workload of individuals remained the same during the planning process	Workload of individuals increased moderately during the planning process.	Workload of individuals increased substantially during the planning process.
Costs →	Inexpensive to make changes/course revisions (e.g., no new costs to make changes)	Somewhat costly to make changes/course revisions (e.g., required some additional costs to make planned changes/course revisions)	Very costly to make changes/course revisions (e.g., required much additional funds to make the changes/course revisions)

4. Soldier Competencies

All individuals answer "A": To the best of your knowledge, *please circle* your response to indicate which Soldier Competencies were addressed in the plan to change/revise the course.
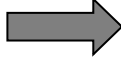
Training Developers also answer "B": *Please circle* your response to indicate the Soldier Competencies which you integrated into the course.

Course Monitors also answer "C": *Please circle* your response to indicate the Soldier Competencies that you monitored being integrated into the course.

SOLDIER COMPETENCIES	Developers and Monitors	Developers Only	Monitors Only
	A) Was this competency in the plan?	B) Did you work on integrating this competency into the course?	C) Did you monitor work on integrating this competency into the course?
a. Tactical and Technical Competence	Y N DNK	Y N	Y N
b. Character and Accountability	Y N DNK	Y N	Y N
c. Comprehensive Fitness	Y N DNK	Y N	Y N
d. Adaptability and Initiative	Y N DNK	Y N	Y N
e. Teamwork and Collaboration	Y N DNK	Y N	Y N
f. Lifelong Learner (includes digital literacy)	Y N DNK	Y N	Y N
g. Communication and Engagements (oral, written, negotiation)	Y N DNK	Y N	Y N
h. Critical Thinking and Problem solving	Y N DNK	Y N	Y N
i. Cultural and Joint Interagency, Intergovernmental, and Multinational competence	Y N DNK	Y N	Y N

5. Methods of Instructional Delivery

The Army Learning Model cites many methods by which courses can be conducted.

All individuals answer "A": To the best of your knowledge, *please circle* your response to indicate which methods of instructional delivery were addressed in the plan to change/revise the course.

Training Developers also answer "B": *Please circle* your response to indicate the delivery methods on which you worked.

Course Monitors also answer "C": *Please circle* your response to indicate the instructional development activities that you monitored.

METHODS OF INSTRUCTIONAL DELIVERY	Developers & Monitors	Developers Only	Monitors Only
	A) Was this area in the plan?	B) Did you work on this area?	C) Did you monitor this area?
a. Instructor led	Y N DNK	Y N	Y N
b. PowerPoint slides	Y N DNK	Y N	Y N
c. Hands-on exercises with equipment	Y N DNK	Y N	Y N
d. Problem-solving exercises (not technology-based)	Y N DNK	Y N	Y N
e. Training devices	Y N DNK	Y N	Y N
f. Prerequisite lessons prior to course (distance learning)	Y N DNK	Y N	Y N
Technology-based			
g. Blended Learning	Y N DNK	Y N	Y N
h. Simulations/ Gaming	Y N DNK	Y N	Y N
i. Mobile applications	Y N DNK	Y N	Y N
j. CBT/IMI lessons	Y N DNK	Y N	Y N
k. Intelligent tutors	Y N DNK	Y N	Y N
Other (*please write in*)	Y N DNK	Y N	Y N

6. Other ALM Concepts

All individuals answer "A": To the best of your knowledge, *please circle* your response to indicate which areas were addressed in the plan to change/revise the course.

Training Developers also answer "B": please circle your response to indicate the area in which you worked.

Course Monitors also answer "C": please circle your response to indicate the areas or activities that you monitored.

OTHER AREAS STRESSED IN ALM	Developers and Monitors	Developers Only	Monitors Only
	A) Was this area in the plan?	B) Did you work in this area?	C) Did you monitor work in this area?
a. Learner-centered activities	Y N DNK	Y N	Y N
b. Problem-solving events and activities (foster ability to solve problems, to think, to adapt, to take initiative…)	Y N DNK	Y N	Y N
c. Making the course more relevant to the field (to Soldier's future duty assignment)	Y N DNK	Y N	Y N
d. Changing or enhancing feedback to students	Y N DNK	Y N	Y N
e. Techniques/Procedures to improve the retention of skills or knowledge of course content	Y N DNK	Y N	Y N

Course Monitors/Managers only: Manpower and Time Estimates

7. For each of the major areas covered in this interview, *please circle* your response to indicate the number of training developers working in that area either full time or part-time.

    a. Enter a 0 when no one was working either full time or part-time (e.g., if all were full-time, then enter 0 for part-time). Leave cells blank when no changes were made in an area.

Manpower Estimates			
AREAS OF REVISIONS/CHANGES	**# of Training Developers**		**Was the manpower <u>more</u> than expected, <u>same</u> as expected or <u>less</u> than expected?**
	Full-time	Part-time	
a. Outcomes Statements			**MORE SAME LESS**
b. Soldier Competencies			**MORE SAME LESS**
c. Course Content – subject matter			**MORE SAME LESS**
d. Tailored Training			**MORE SAME LESS**
e. Methods of Instructional Delivery			**MORE SAME LESS**
f. Learner-centered and/or Problem-solving activities/exercises/scenarios			**MORE SAME LESS**
g. Principles of Learning to enhance learning, retention, transfer to the field			**MORE SAME LESS**
h. Other (***please write in***)			**MORE SAME LESS**
i. Resources involved in compiling the revised course – editing, checking for internal consistency, etc.			**MORE SAME LESS**

8. For each of the major areas covered in this interview, please circle your response to indicate the estimated *time* that was spent on changes in each area (consider start to completion dates, e.g., from April through May would be 2 months). Leave cells blank when no changes were made in an area.

Time Estimates		
AREAS OF REVISIONS/CHANGES	**Time Estimate**	**Was the time more than expected, the same as expected or less than expected**
a. Outcomes Statements		MORE SAME LESS
b. Soldier Competencies		MORE SAME LESS
c. Tailored Training		MORE SAME LESS
d. Methods of Instructional Delivery		MORE SAME LESS
e. Learner-centered and/or problem-solving activities/exercises/scenarios		MORE SAME LESS
f. Principles of Learning to enhance learning, retention, transfer to the field		MORE SAME LESS
g. Other (***please write in***)		MORE SAME LESS
h. Resources involved in compiling the revised course – editing, checking for internal consistency, etc.		MORE SAME LESS

EXECUTING THE REVISED COURSE INTERVIEW QUESTIONS

Position: _____ (filled in by interviewer)

[Questions assume the revised course has been executed at least once.]

You stated previously that you were involved in execution/presenting or monitoring of the revised course.

The next set of questions focuses on that process and the lessons learned with the revised course. Answer them to the best of your ability and knowledge. We understand that individuals had different experiences and roles in this process. If you are unable to answer a question based on your experience, simply indicate that you are not aware of what happened.

> **Interviewer: There are two sets of questions. Ask instructors the first set of questions. Ask course monitors/managers the second set of questions.**

Instructor Background Questions

1. Briefly describe your role in the Execution stage_____

2. Were you an instructor for this course prior to the revisions being made? Yes   No
   If yes, how many times did you teach it? _____

3. How many times have you taught the revised course?

4. When and how were you told about the approaches to be used in the revised course?

5. How soon was this prior to when the revised course was first executed?

6. What communications did you have with the training developers during course execution?

   a. Did you have any opportunity to work with training developers during their redesign?

7. Did you receive guidance throughout the course from any outside personnel? Or did you execute the course as was planned?

8. How did you interact with the course manager during implementation of the course?

Course execution

9. Did you have a tryout or "dry-run" of the course?
   a. If yes, what was the timeframe of the first iteration of the course changes?

b. If no dry run, did you have sufficient time to prepare for the course with the revised changes? Did you have an opportunity to ask questions of training developers, if needed?

10. Were the lesson plans such that you clearly understood the intent of the changes?

11. If new technologies were inserted, were you prepared to use them effectively?

12. How do you feel that your instructional methods have changed in executing the revised course?
    a. Did your methods change substantially from before the changes? Describe any changes, and what impacted them.
    b. Did you use other methods in the execution of the course that were not originally planned for or developed? Describe any changes, and what impacted them.

13. How do you feel that your interactions with students have changed in executing the revised course?   Did you consider yourself as a "facilitator" in any parts of the revised course, whereas previously you would have been a "sage on the stage" (direct instruction)?

14. Did the course include team-based (collaborative) or peer-to-peer exercises?
    a. Can you describe the nature of these exercises?
    b. When was instructor-involvement necessary in such exercises?

15. Did you feel that any sections of the course which involved you as a facilitator or which were team-based (collaborative) or peer-to-peer exercises required greater in-depth subject matter knowledge than a direct instruction approach? Yes No   Explain your answer.

16. Did the lesson plans and supporting materials/technologies allow you to meet ALM objectives such as the following? **Interviewer: The instructor should respond to each of the following areas. Probe their answers.**
    a. Learner-centered training
    b. Tailored training
    c. Facilitating the development of Soldier competencies
    d. Improving Soldier problem-solving, thinking abilities, and/or initiative
    e. Making the content more relevant to the Soldier's career field
    f. Other

17. If Soldier competencies were integrated in the lesson plans, what challenges were presented in trying to instill these competencies in the students?

Internal Course Assessment

18. What have been the student reactions to the revised course?

a. Probe: Are student expectations different? Have they heard about the changes/aware of the changes?

b. Which procedures or technologies do students particularly like/dislike, find beneficial?

19. Were the performance tests prior to the revisions the same so you could compare performance after the revised version of the course? Yes No
    a. If *yes*, what are the trends in the results?
    b. If *no*, do you feel that students are better performers after the course revisions were made?
        i. What student behaviors indicate better performance?
        ii. Do the students seem to retain the information better? What behaviors indicate higher levels of retention?
        iii. Do the students seem more engaged? What student behaviors indicate higher levels of engagement?
        iv. Do the students seem more motivated? What student behaviors indicate higher levels of motivation?

20. If the lesson plans specified procedures for assessing competencies, how did these techniques work for you?

21. Did you conduct AARs? Can you describe exceptionally good or poor examples of AARs?

Resources

22. Did you have the necessary resources to implement the changes?
    a. Did you feel that you needed additional instructors to implement the course?
        i. Did you ask for and receive additional instructors?

    b. What logistical support was needed to execute the course? Was this available? Did you request additional support? If so, please describe.

    c. Did your workload increase, decrease, remain the same?
        i. Describe changes and why you think these occurred.

    d. Do you feel you were adequately prepared to teach the course with the changes/revisions?
        i. How would you design the instructor training now that you have taught the revised course? What particular instructional points/capabilities should be stressed for a new instructor – one who has never taught the course previously? What instructional skills are critical?

Course Execution Lessons Learned

23. What were the main lessons learned from executing the planned changes?

24. Which changes/course revisions worked well?
    a. Which of the revisions to the course did you find to be most effective?
    b. Which changes were easiest for you to implement?
    c. What features did you think should be sustained?

25. What were the main challenges in executing the changes?

26. What would you have done or are doing differently?
    a. Were you given the opportunity to further refine the course?
        If so, what further changes have you been able to make?

27. Do you have future changes planned? What are they? Timeline?

28. What do you feel are the main sustainment issues?

29. What other comments do you have on executing the revised course?

Course Monitor/Manager Questions on Execution

1. Briefly describe your role in the execution stage.
    a. What were your interactions with instructors during course execution (while they were instructing)?

2. When did you monitor the revised course?
    a. Was this the first iteration or a later iteration?
    b. Did you observe the entire course or only some blocks of instruction?
        If only some blocks of instruction, which blocks did you observe?

3. How many instructors did you observe?

4. Based on your observations, what are your reactions to the revised course? If you do not have sufficient information to answer a question, simply state that is the case.

5. If new technologies were inserted, were the instructors able to use them effectively?
    a. Did the instructional technologies seem to accomplish their intended purpose or are revisions needed?
    b. Do you believe that the instructional methods used by the instructors changed when the revised course was executed? If so, How?
    c. Do you believe that the instructors' interactions with students changed in executing the revised course?

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d. If the course included team-based or peer-to-peer exercises, please describe the nature of these exercises.
e. For the appropriate lessons, was the instructor able to change from being a "sage on the stage" to being a "facilitator"?
    i. Was this easily accomplished or did the instructor appear to need more preparation?
    ii. Did these lessons appear to demand in-depth subject matter knowledge on part of the instructor?
f. How did the lesson plans and supporting materials/technologies appear to meet such ALM objectives as the following? **Interviewer: The individual should respond to each item. Probe**
    i. Learner-centered training
    ii. Tailored training
    iii. Facilitating the development of Soldier competencies
    iv. Improving Soldier problem-solving, thinking abilities, and/or initiative
    v. Making the content more relevant to the Soldier's career field
    vi. Other

6. If Soldier competencies were integrated, do you think the integration was effective?

7. How did the ALM changes impact the logistical support for the course? Were the logistical requirements of the course/the instructors met?

Course Execution Lessons Learned

8. From your perspective, what were the main lessons learned from executing the planned changes?

9. Which changes/course revisions seemed to work well?
    a. Which of the revisions to the course did you find to be most effective?
    b. Which features do you think should be sustained?

10. What were the main challenges in executing the changes?

11. What POI lessons do you think should be revised?

12. What other changes would you recommend?

13. Did the instructors seem to be adequately prepared to teach the revised course?

14. How would you design the instructor training now that you have observed course execution?

Probes. What particular instructional points/capabilities should be stressed when preparing a new instructor – one who has never taught the course previously? What instructional skills are critical? In what ways do these skills differ from the current set of skills which are emphasized?

15. What do you feel are the main sustainment issues?
    a. Probes: Did you have the necessary resources to implement the changes? What additional resources are needed for successful and continuing implementation?

16. Have you or do you plan to provide feedback on implementation to training developers, course planners and/or key decision-makers?   If feedback has been given, what were the major points?
    a. What lessons learned would you like to share regarding the process of ALM implementation?

External Assessment

17. Have any external assessments been conducted on student reactions to the revised course?
    a. If yes, what were the major findings? Did the findings imply that further course modifications are needed?

18. Have any external assessments been conducted on student performance/proficiency in the revised course? Is there an appropriate baseline measure that could be used?
    a. If so, who is collecting these data? What are the major findings?
    b. If no comparable performance measures exist, is there a plan to obtain them in the future? What unit/agency would be responsible for these efforts – developing measures, collecting the data, reporting the findings, etc.?
    c. From your observations, do you feel that students are better performers after the course revisions were made? What student behaviors indicate better performance?
    d. Do the students seem to retain the information better? What behaviors indicate higher levels of retention?
    e. Do the students seem more engaged? What student behaviors indicate higher levels of engagement?
    f. Do the students seem more motivated? What student behaviors indicate higher levels of motivation?

General Reactions

19. Has the implementation of the ALM changes affected your work load? If so, in what way?

20. What other comments do you have on executing the revised course?

SUSTAINMENT OF COURSE CHANGES

Position: _____ (filled in by interviewer)

In answer to a previous question, you indicated that you would probably have a role in sustaining the course changes. Once changes are made to courses, it is sometimes hard to ensure than they are sustained.

Roles/Responsibilities

1. First, what will be (is) your role in sustaining the course changes?

2. **Has the course been executed several times? Yes   No**
    a. **If yes, how many? We consider 3x sustainment.**

3. What agencies/units/individuals will be/are involved with sustaining the change?

4. What will be/are their specific responsibilities?

5. What agency/unit will be/is responsible for the following? If not known at this time, please indicate that this is unknown.

    a. Obtaining information on:
        student performance? _____
        student reactions?_____
    b. Obtaining recommendations regarding course improvements:
        from instructors? _____
        from training developers?_____
    c. Obtaining input on ways to improve the course from the instructors?_____
    d. Determining whether instructors are executing the revised course as intended?_____
    e. Ensuring new instructors are prepared to execute the revised course as intended?_____
    f. Checking to determine whether content needs to be updated and the impact that has on the methods of delivering the training (e.g., lesson plans, technology update)? _____
    g. Determining a solution to a particular lesson or technological approach when it is not working as desired? _____
    h. Sustaining required training support/logistics?_____

6. If you identified your agency as responsible for one or more of these actions, what challenges do you envision with carrying out these responsibilities?   What plans have been developed to address sustainment issues?

7. Often with course changes, the impetus or rationale for the changes "disappear" after the individuals originally involved in initiating the changes are no longer present (that is, they "disappear" as well). What plans will be/have been established for a-lasting audit trail of the rationale for course changes, of the critical decisions that were made, and for updating this audit trail?

   a. Is/was there a Knowledge Management Officer or NCO assigned to the course?

If the answer to # 2 is Yes and 3x or more, then ask the following questions regarding Overall Lessons Learned from Course Execution (Questions 8-12)

8. What was learned about refinements to the revised course over this period?

9. What was learned about consistency in course execution over time?

10. What challenges existed regarding sustaining course changes?

11. During this period of time, what type of additional support was requested by:
    a. Faculty/staff
    b. Training developers
    c. Instructors
    d. Students
    e. Quality assurance

12. What other resources do you estimate would be needed to sustain the changes?

    a. Do you think that additional personnel will be required to sustain the changes?
       _____Yes ___No
       If yes, how many additional personnel?_____

    b. Similarly, do you feel that the current personnel have the appropriate skills to sustain the changes? _____Yes _____No

       If *no*, what additional skills are needed to sustain the revisions?

    c. How do you think sustainment of the changes will affect individual workloads? More, less, about the same?

Appendix C
Codebook for Interviews

Code	Sub-Code
Shot-in-the-Arm Initiative	
SITA Attendance	
SITA Take Away	• Unclear TRADOC guidance
Course Selection	
Involvement in Course Selection	
Course Selection	
Front-end Analysis	
Role	
Role of Course Manager	
Role of Middle Manager	
Role of Staff & Faculty	• Sustainment • Communication • Descriptions of roles • Materials/knowledge for Staff and Faculty
Role of QA	• Sustainment • Communication • Descriptions of roles • Unclear role of Quality Assurance Personnel
Champion	• Any direct mention of a person who spearheaded the efforts and what position.
Instructor	
Instructor Turnover	• Personnel turbulence of key positions
Instructor Workload	
Knowledge of ALM	
Knowledge	• Did they have knowledge or have to acquire knowledge? • Effects of having to get knowledge (workload) • Difficulty in acquiring knowledge (no access to classes) • Uncertain of changes • Asking for further clarification of ALM • Did they have the necessary skillsets to make the revisions by position • Did they relate it to something they have done previously or currently do (e.g., prior courses, prior instructional techniques, deployed experiences) • What ALM stands for • Prior background knowledge of students
Instructor Training	• Instructor preparation

Training Developer Training	
Communication between Stakeholders	
Communication	• Communication between key positions • Interactions with training developers
Rate of Adoption Variables	
Compatibility	
Complexity	• Workload • Degree of difficulty in creating exercises • Degree of difficulty in tailoring training • Degree of difficulty in making the course student centered • Degree of difficulty in peer coaching • Degree of difficulty in developing and using technology • Difficulty in making course relevant to the field • Difficulty in improving student performance • Degree of change – entire course, specific lessons within the course, specific exercises, homework only, reduction in PPT only, other specific changes only. • Assessment challenges • Extent of feedback to students
Observability	• Student behaviors • Instructors behaviors • Course manager behaviors • Leader behaviors • Sustainment processes • Technology improvements • Additional resources provided • Comparison to legacy course • Changes in course outcomes
Re-invention	• Instructional techniques • Defining ALM for themselves • Types of revisions • Extent of revisions • Training gap identified • Modify • Rejection of some components of ALM • ALM perceived as flexible, adaptable conversely doesn't fit, doesn't apply • Second or third attempts of revisions • Instructor writers • Making pen and ink changes • Flexibility to make changes on own • Rewrite • Restructure • Change • Revise • Redo

Relative Advantage	• Positive comments regarding changes • Negative comments regarding changes • Perceptions of sustainment • Comparison to pre-SITA • Incentives to change
Trialability	• To what degree were different things tried in the course? • Survey data had a question regarding how often the revised course was executed. • Pilot?
Other Activities that Impact Stage	• Teachable moments • Resource constraints • Group testing • Instructors have to understand the material • Prior background knowledge of students • Interactions with training developers
21st Century Soldier Competencies	
Adaptability & Initiative	• Initiative
Character & Accountability	
Communication & Engagement	
Comprehensive Fitness	
Critical Thinking & Problem Solving	• Problem solving
Cultural & JIIM	
Lifelong Learner	
Tactical & Technical	
Teamwork & Collaboration	
Types of Revisions	
Blended Learning	
Capstone Exercises	
Facilitation	• Facilitate
Group Activities	• Break into small groups • Team based
Hands-on Experiences	• Hands-on
Homework	• Homework • Work outside of class • Pre-reading
Learner centric	• Learner centric • Student centered
Peer-to-Peer	• Pair strong and weak students
PowerPoint	• Reduction in PowerPoint
Practical Exercises	• Scenario-based • Experiential learning
Pre & Post Testing	• Pre-assessment • Pop quizzes
Reinforcement	• Reinforce information and materials
Rubric	
Tailored Training	• Tailored training
Technology	

Training Development Capacity	
Training Development Capability	• Training Development Capability or TDC
Outcomes	
Major Accomplishments	• Changes in student behaviors for the positive • Positive comments by position • Met the intent of ALM tenets • Success stories from bullets • Positive feedback
Student Related Activities & Outcomes	• How to find information • How to use technical manuals • Conduct research • Student participation • Keeps awake • Want to learn • Application • Be prepared • Participate • Fail a test • Asking questions • Don't like it • Didn't study • Quality of briefs goes down • Information not retained
Student Feedback	
Receiving Unit Feedback	

Appendix D
Responses to the Background, Planning, and Developing Revisions Questionnaires

Background Participant Questionnaire

Stage 1. Decision Making

Please indicate on the scale below the best description of the decision-making process.

	# of Respondents		
Response Options	SUSTAIN	EXECUTE	PLAN/DEV
Candidate courses hard to identify; decision made after much discussion and debate	0	0	0
Several courses immediately considered; pros and cons weighed before the final decision	1	5	2
Candidate course(s) easily identified. Course decision made with little debate	5	1	3

Stage 2. Planning and Identifying Solutions

Please indicate the degree to which the following activities are(have) occurring(ed) during the process of planning for course revisions.

Response Options for Identifying Revisions	SUSTAIN	EXECUTE	PLAN/DEV
Issue/revisions not identified or agreed upon by the team as the most critical to change	0	1	1
Issues/revisions somewhat identified and agreed upon by the team as the most critical to change	0	5	5
Issues/revisions fully identified and agreed upon as the most critical to change	6	2	2

Response Options For Identifying Solutions	SUSTAIN	EXECUTE	PLAN/DEV
Proposed solutions/changes did not match the issues that were identified; team did not/has not agree(d) on solutions/changes	0	2	0
Proposed solutions/changes somewhat matched the identified issues; team somewhat agreed on solutions/changes	0	3	6
Proposed solutions/changes matched/were appropriate for the identified issues; team fully agreed on solutions/changes	6	3	1

Stage 3: Developing Course Revisions

Please indicate the degree which the following activities are (have) occuring(ed) during the process of developing the course revisions.

Response Options for Developing Course Materials	SUSTAIN[a]	EXECUTE	PLAN/DEV
Have not yet developed course materials	0	3	5
Have developed draft course materials	1	1	1
Have developed and finalized course materials	5	5	0

Response Options for Developing Instructor Materials	SUSTAIN[a]	EXECUTE	PLAN/DEV
Have not yet developed materials for training instructors	1	3	2
Have developed draft materials for instructor training	0	2	3
Have fully developed instructor training and executed an instructor training course	2	4	0

[a] Did not tally a single 2.5 on SUSTAIN for both questions, as appropriate category could not be determined (drafted materials vs. fully drafted/execute).

Planning Questionnaire

How were changes viewed by your team in the planning process?

Degree of change

	# of Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
Minor course revisions: Slight adjustments to the current lesson plans	0	0	0
Moderate course revisions: Additions or revisions of student exercises, slight changes to instructor training, etc.	1	0	1
Large-scale course revisions: Re-write of the POI and lesson plans, extensive instructor training	2	3	3

Difficulty of making the changes/ course revisions

	SUSTAIN	EXECUTE	PLAN/DEV
Simple tasks to make changes/ course revisions (e.g., low fidelity, no content change)	0	0	0
Moderate difficulty tasks to make changes/ course revisions (e.g., changes to current content, changes to existing software)	2	1	2
Extremely difficult/very complex to make changes/ course revisions (e.g, new software development, all new content/lesson plans)	1	2	2

Change in Instructor behavior/ procedures

	SUSTAIN	EXECUTE	PLAN/DEV
Minor and few changes needed in instructional techniques from the prior course; no new instructor training (e.g., removal of Power Point slides, more repetition of exercises to enhance learning and retention)	0	0	0
Somewhat difficult for the instructor. Most desired changes built upon instructional techniques previously used. Instructor training needed for some blocks of instruction (e.g., desk-top simulations, insertion of more complex problem-solving exercises)	2	3	2
Substantial changes in instructional techniques; training required to prepare instructors for most of the course (e.g., SUSTAIN direct instruction to primarily facilitator, focus on technical skills only to focusing on decision-making)	1	0	2

Time requirement

	SUSTAIN	EXECUTE	PLAN/DEV
No additional time required to make the changes/ course revisions	0	0	0
Moderate amount of time needed to make changes/course revisions (e.g., a few hours a week)	2	0	0
Extreme amount of time needed to make changes/course revisions (e.g., entire day per week spent making revisions)	1	3	4

Manpower requirement

	SUSTAIN	EXECUTE	PLAN/DEV
Changes can be/were made with current personnel (e.g, 1-2 people)	2	2	1
Some additional manpower was needed to make the course changes/revisions (e.g., accomplished changes by adjusting personnel in-house)	1	0	1
Much additional manpower was needed to make the changes/course revisions (e.g, had to hire outside personnel with specific skills to accomplish the changes such as software developers)	0	1	2

Workload requirement

	SUSTAIN	EXECUTE	PLAN/DEV
Workload of individuals remained the same during the planning process	0	0	1
Workload of individuals increased moderately during the planning process	3	3	1
Workload of individuals increased substantially during the planning process	0	0	2

Costs

	SUSTAIN	EXECUTE	PLAN/DEV
Inexpensive to make changes/course revisions (e.g, no new costs to make changes)	3	0	1
Somewhat costly to make changes/ course revisions (e.g, required some additional costs to make planned changes/course revisions)	0	1	2
Very costly to make changes/course revisions (e.g., required much additional funds to make the changes/course revisions)	0	1	0

D-4

Developing Revisions Questionnaire

Question 3: How were changes viewed by your team during development?

Degree of Change

Response Options to Degree of Change	# of Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
Minor course revisions: Slight adjustments to the current lesson plans	0	3	1
Moderate course revisions: Additions or revisions of student exercises, slight changes to instructor training, etc.	4	2	3
Large-scale course revisions: Re-write of the POI and lesson plans, extensive instructor training	3	5	2

Difficulty of making the changes/ course revisions

Response Options to Difficulty of Making Changes/ Revisions	SUSTAIN	EXECUTE	PLAN/DEV
Simple tasks to make changes/ course revisions (e.g., low fidelity, no content change)	1	2	1
Moderate difficulty tasks to make changes/ course revisions (e.g., changes to current content, changes to existing software)	5	5	2
Extremely difficult/very complex to make changes/ course revisions (e.g., new software development, all new content/lesson plans)	1	3	3

Change in Instructor behavior/ procedures

Response Options to Change in Instructor Behavior/ Procedures	SUSTAIN	EXECUTE[a]	PLAN/DEV
Minor and few changes needed in instructional techniques from the prior course; no new instructor training (e.g., removal of Power Point slides, more repetition of exercises to enhance learning and retention)	3	2	1
Somewhat difficult for the instructor. Most desired changes built upon instructional techniques previously used. Instructor training needed for some blocks of instruction (e.g., desk-top simulations, insertion of more complex problem-solving exercises)	2	4	4
Substantial changes in instructional techniques; training required to prepare instructors for most of the course (e.g., SUSTAIN direct instruction to primarily facilitator, focus on technical skills only to focusing on decision-making)	2	3	1

[a] A single 1.5 was not tallied.

Time requirement

Response Options to Time Requirement	SUSTAIN	EXECUTE[a]	PLAN/DEV
No additional time required to make the changes/ course revisions	0	2	0
Moderate amount of time needed to make changes/course revisions (e.g., a few hours a week)	5	1	3
Extreme amount of time needed to make changes/course revisions (e.g., entire day per week spent making revisions)	2	6	3

[a] A single 2.5 was not tallied.

Manpower requirement

	SUSTAIN	EXECUTE	PLAN/DEV
Changes can be/were made with current personnel (e.g, 1-2 people)	2	3	4
Some additional manpower was needed to make the course changes/revisions (e.g., accomplished changes by adjusting personnel in-house)	5	3	0
Much additional manpower was needed to make the changes/course revisions (e.g, had to hire outside personnel with specific skills to accomplish the changes such as software developers)	0	4	2

Workload requirement

Response Options to Workload Requirement	SUSTAIN	EXECUTE	PLAN/DEV
Workload of individuals remained the same during the planning process	2	1	1
Workload of individuals increased moderately during the planning process	5	5	1
Workload of individuals increased substantially during the planning process	0	4	4

Costs

Response Options to Costs	SUSTAIN	EXECUTE	PLAN/DEV
Inexpensive to make changes/course revisions (e.g, no new costs to make changes)	7	2	4
Somewhat costly to make changes/ course revisions (e.g, required some additional costs to make planned changes/course revisions)	0	3	1
Very costly to make changes/course revisions (e.g., required much additional funds to make the changes/course revisions)	0	4	0

Manpower and Time Estimates (Seven areas were covered in the questionnaire. The questions also asked the respondent to indicate the number of full time and part-time training developers working on each type of revision.)

Question 7: For each of the major areas covered in this interview, please circle your response to indicate the number of training developers working in that area either full time or part-time.

Outcome statements

Was The Manpower More Than Expected, Same As Expected Or Less Than Expected?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	3	2
Same	2	3	0
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1,1	2,3	1
Part Time	1,4	1	0

Soldier competencies

WAS THE MANPOWER MORE THAN EXPECTED, SAME AS EXPECTED OR LESS THAN EXPECTED?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	2	1
Same	2	4	1
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1,1	1,2	1
Part Time	1,4	2	0

Course content – subject matter

WAS THE MANPOWER MORE THAN EXPECTED, SAME AS EXPECTED OR LESS THAN EXPECTED?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	3	1
Same	2	3	1
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1,1	2,2,2,3	1
Part Time	1,4	2	0

Tailored training

WAS THE MANPOWER MORE THAN EXPECTED, SAME AS EXPECTED OR LESS THAN EXPECTED?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	3	1
Same	2	2	1
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1,1	2	1
Part Time	1,4	2	0

Methods of instructional delivery

WAS THE MANPOWER MORE THAN EXPECTED, SAME AS EXPECTED OR LESS THAN EXPECTED?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	3	1
Same	2	3	1
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1,1	1,2	1
Part Time	1,4	1,2	0

Learner centered and/or problem solving activities/exercises/scenarios

WAS THE MANPOWER MORE THAN EXPECTED, SAME AS EXPECTED OR LESS THAN EXPECTED?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	5	2
Same	2	1	0
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1,1	1,2	1
Part Time	1,4	1,2	0

Principles of learning to enhance learning, retention, transfer to the field

WAS THE MANPOWER MORE THAN EXPECTED, SAME AS EXPECTED OR LESS THAN EXPECTED?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	3	2
Same	2	2	0
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1,1	2	1
Part Time	1,4	1,2	0

Resources involved in compiling the revised course – editing, checking for internal consistency, etc.

WAS THE MANPOWER MORE THAN EXPECTED, SAME AS EXPECTED OR LESS THAN EXPECTED?	# Respondents		
	SUSTAIN	EXECUTE	PLAN/DEV
More	1	3	2
Same	2	1	0
Less	1	0	0
	# Training Developers		
	SUSTAIN	EXECUTE	PLAN/DEV
Full Time	1,1,1	0	1
Part Time	1	0	0

Appendix E
Effects of Facilitating and Inhibiting Factors

Philosophy/Approach to Making Course Changes

The approach or plan for making changes impacted the process of adoption and consequently the rate of adoption. The existence of pilots facilitated the rate of change and enhanced the degree to which training developers and instructors communicated with each other and were on the "same sheet of music," thereby facilitating understanding and adoption of ALM concepts. Instructors who were initially reluctant to change gradually were able to implement ALM approaches such as facilitation over repeated iterations of the course. On the other hand, when no such plan existed and/ or the plan was to wait to implement until the entire course was revised, feedback from instructors was delayed, and communication between training developers and instructors was often inhibited. These factors led to delays in implementation.

```
Philosophy / Approach          + Phased-in Changes          + Faster Feedback
to Making Course               Planned to Pilot             from Instructors to
Changes                        Executed                     Modify for Next Pilot /
                                                            Iteration

                                                            + Time for Instructors
                                                            to Adapt to Changes

                                                            + Faster
                                                            Implementation

                               - Implement Entire           - Reduced Ability for
                               Course First                 Instructors to Refine
                                                            Approaches

                                                            - Slower
                                                            Implementation if First
                                                            Execution Does Not
                                                            "Work"
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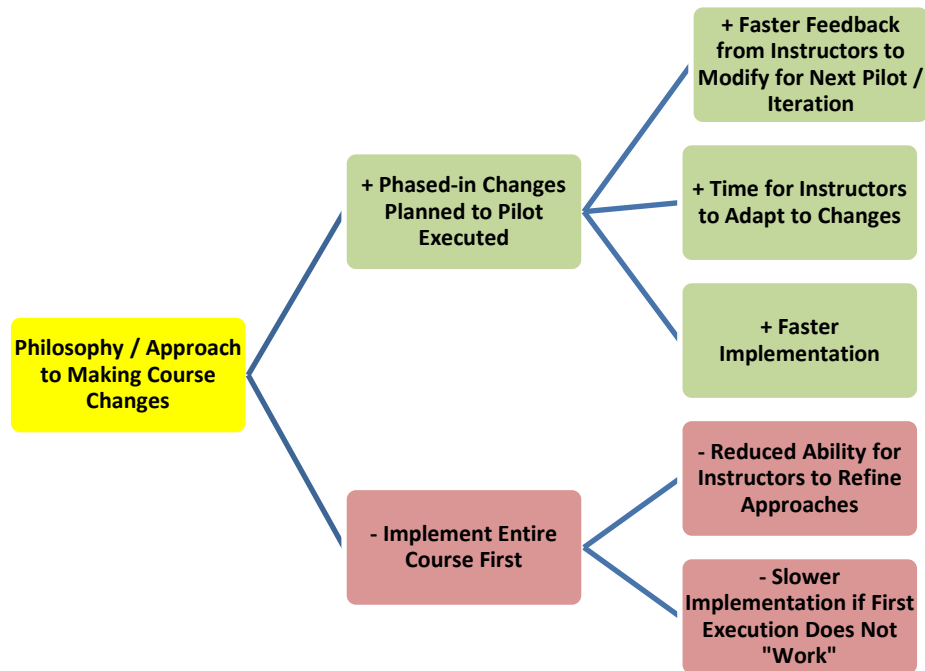
Figure E-1. Impacts of the philosophy / approach to making course changes.

Increased Student Accountability

Increased student accountability was reflected in the shift to a facilitation mode of classroom instruction and in testing procedures. In both cases, students were held more accountable for their learning, rather than being highly dependent upon the instructors. Read-aheads and homework were stressed. If a student had not done the read-aheads or homework, he/she was not prepared for class discussions and could not participate. Similarly, as some instructors tested material that was not discussed or presented in class, doing the necessary homework and study was essential to doing well on tests. Thus there were consequences for not doing this work. On the other hand, this required more preparation on part of the instructors. Figure E-2 presents these different effects.
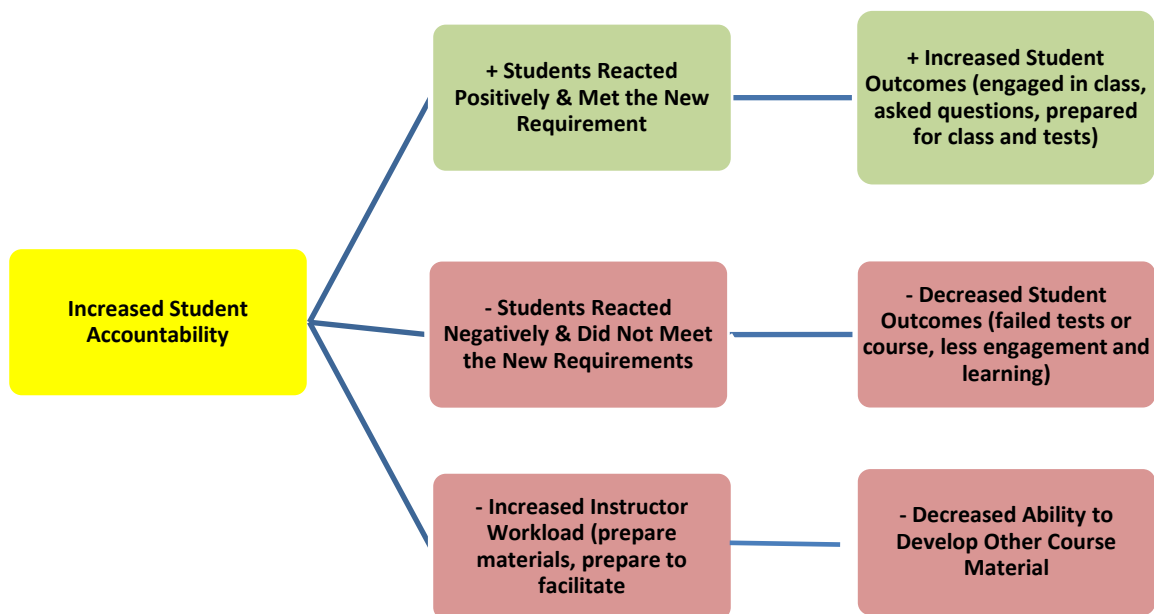

Figure E-2. Impacts of making students more accountable for their learning.

Varied Student Backgrounds and Experiences

       Diverse student backgrounds were common in many of the courses. When instructors were able to adapt to diverse student backgrounds through peer-to-peer systems or with special attention, ALM concepts were fostered. But in other cases, time-constraints and / or the subject matter prevented tailoring to either the low-performing students or the more capable students. Facilitation was also difficult under such circumstances (see Figure E-3).
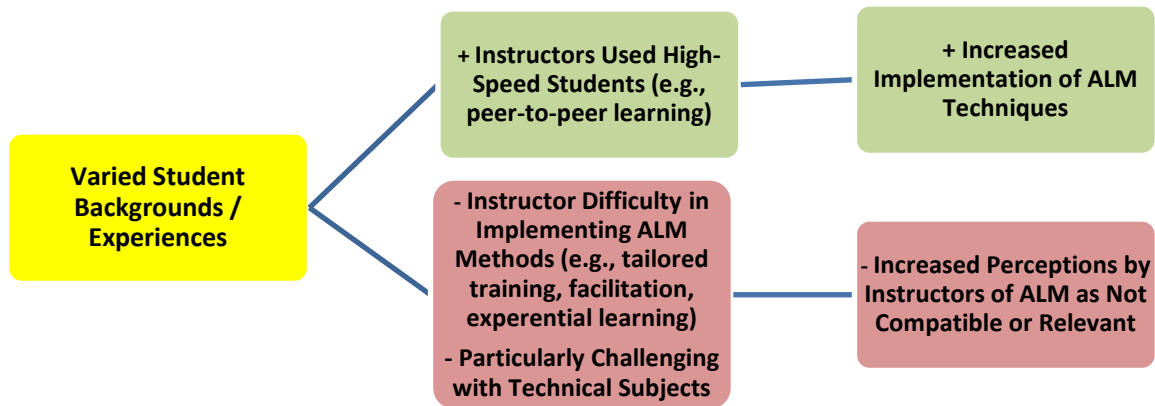

Figure E-3. Impacts of varied student backgrounds and experiences.

Communication/Collaboration between Training Developers and Instructors

A common issue with the ALM changes was getting the developers and instructors to have similar understandings of ALM. This required collaboration between these two key groups of individuals, who were often under different chains of command. When collaboration was established, particularly early in the process or when the relationship between the two groups was strengthened over several iterations of the revised course, the change process was more effective and faster (see Figure E-4). Final recommendations are that this collaboration process be established in the very first phases of major curriculum changes.
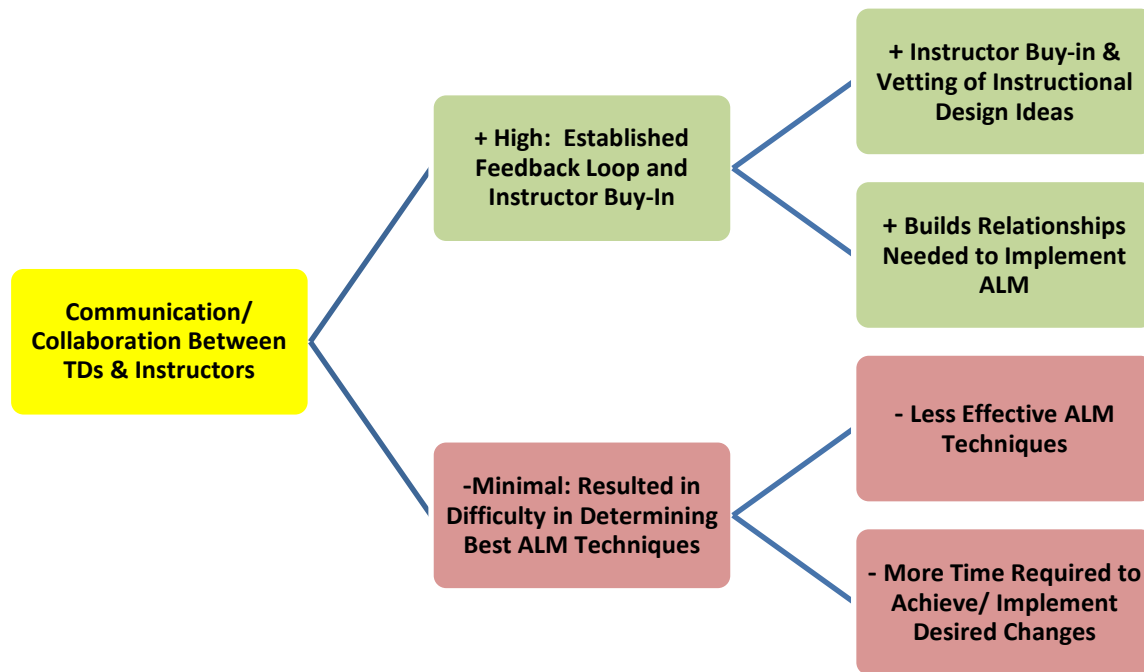

Figure E-4. Impacts of communication / collaboration between training developers and instructors.

Resources

       The primary resource demand for the ALM changes related to personnel, as no new technologies were developed for the courses in the research. Wherever there were shortages of personnel, there was a negative impact on the innovation process (see Figure E-5).
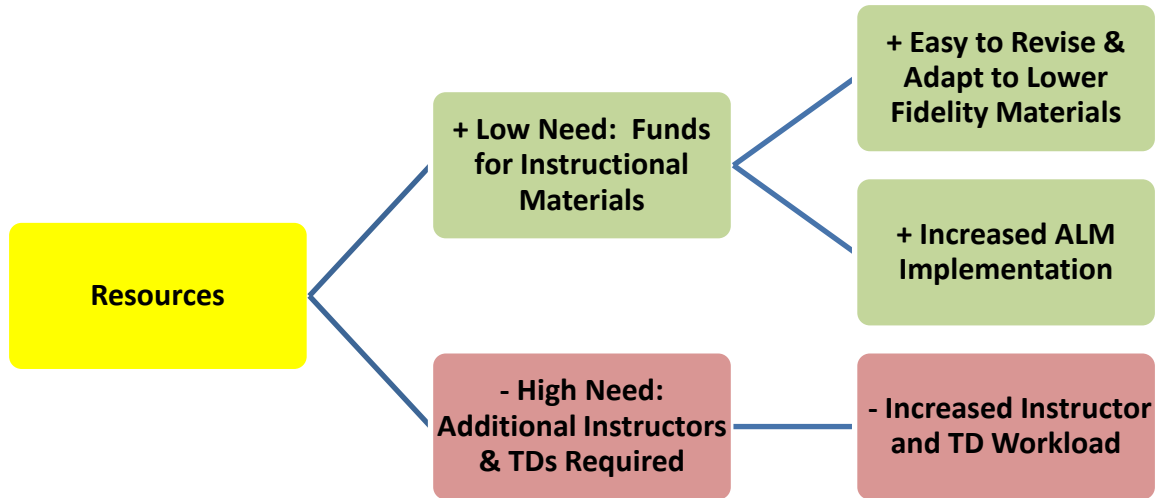
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                                                    ┌──────────────────────┐
                                                    │ + Easy to Revise &    │
                                 ┌──────────────────┤   Adapt to Lower      │
                    ┌────────────────────────┐      │   Fidelity Materials  │
                    │ + Low Need:  Funds     │      └──────────────────────┘
                    │   for Instructional    │
                    │   Materials            │      ┌──────────────────────┐
     ┌───────────┐  └────────────────────────┘      │ + Increased ALM       │
     │           │                          └───────┤   Implementation      │
     │ Resources │                                  └──────────────────────┘
     │           │
     └───────────┘  ┌────────────────────────┐      ┌──────────────────────┐
                    │   - High Need:          │      │ - Increased Instructor│
                    │ Additional Instructors  ├──────┤   and TD Workload     │
                    │   & TDs Required        │      └──────────────────────┘
                    └────────────────────────┘
```

Figure E-5. Impacts of resources

Instructor Role Changes

When instructors also became writers (i.e., developers) as was the case in a few courses, both positive and negative impacts were felt. These are summarized in Figure E-6. Both the positive and negative impact should be considered when this approach to curriculum change is proposed.
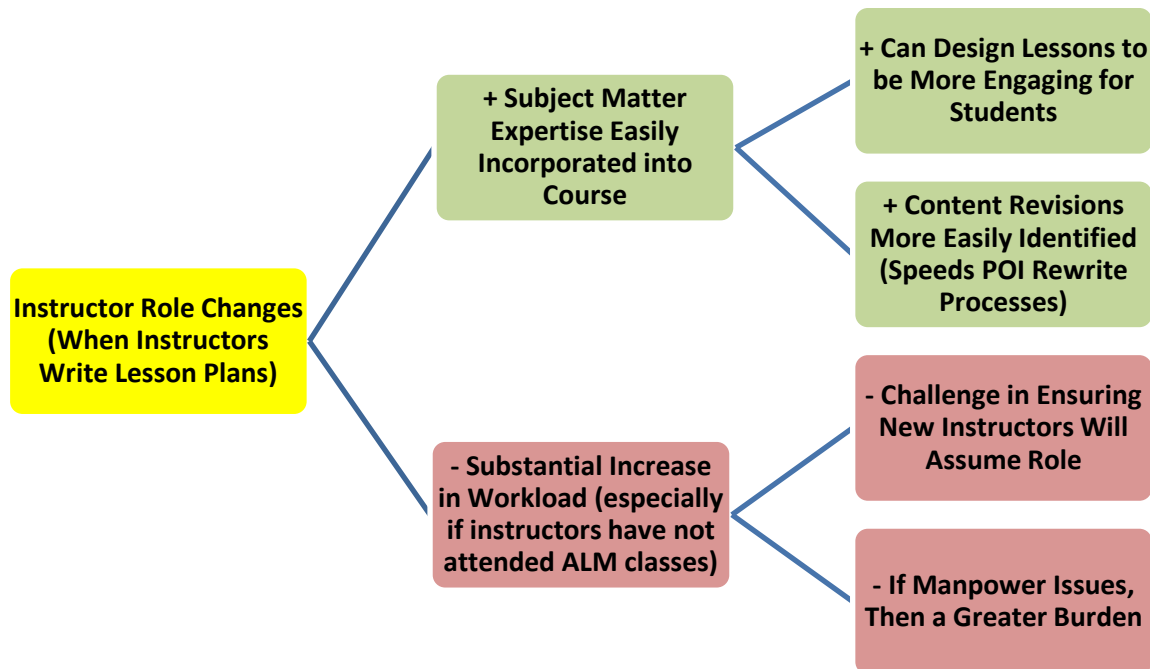

Figure E-6. Impacts when instructors also become writers of lesson plans.