

Redesign of Indiana Workplace Specialist I Teacher Training: Lessons Learned

Charles Feldhaus

Indiana University Purdue University Indianapolis

cfeldhau@iupui.edu

Edward J. Lazaros and Sam Cotton

Ball State University

ejlazaros@bsu.edu; scotton@bsu.edu

Jim Smallwood

Indiana State University

jim.smallwood@indstate.edu

Abstract

The purpose of this manuscript is to provide information about the processes used and lessons learned by those who researched, developed, and completed a redesign of the Indiana Workplace Specialist I teacher training program. In July of 2013, the State of Indiana committed \$10 million dollars to the Science, Technology, Engineering and Mathematics Teacher Recruitment Fund. Indiana University Purdue University Indianapolis, Ball State University, Indiana State University, the Indiana Association of Career and Technical Education Districts (IAC TED) and the Indiana Department of Education created a partnership and consortia to completely redesign the Workplace Specialist I (WSI) teacher training program for all new Career and Technical Education (CTE) teachers in Indiana and deliver it asynchronously online. The consortia were awarded nearly \$300K to complete all elements of the revision. This manuscript details the design of the program, the research based unit development, and the lessons learned by all partners in the consortia.

Introduction

Teacher preparation in career and technical education (CTE) has a long and illustrious history that has often blazed new trails in alternative teacher certification. Traditionally, K-12 teachers are prepared by attending a four year university and attaining a Bachelor's degree. Completion of this degree along with a clinical experience in schools — commonly referred to as “student teaching” — is the traditional way that most universities prepare teachers (Wilson, S.M., Floden, R.E., and Ferrini-Mundy, J., 2002).

Historically, CTE teachers have not followed traditional pathways to teacher certification and licensure like other K-12 disciplines (Zirkle, Martin, and McCaslin, 2007). Practical,

on the job, work experience in the occupation to be taught has long been a prime consideration in the certification/licensure of CTE teachers, primarily due to a stipulation in the Smith-Hughes Act of 1917 that only personnel with practical work experience be permitted to teach in federally reimbursed programs (Miller, 1982). Trade & Industrial (T & I) fields such as automotive technology, construction technology, advanced manufacturing, and health occupations programs such as nursing, pharmacy technicians and emergency medical technicians rely heavily on occupational experience. According to Lynch (1997), about twenty-percent of CTE faculty comprise the T & I content areas. The required years of work experience vary by state and often are combined with education levels. In the last twenty years, university-based CTE teacher preparation programs have diminished significantly. Studies by Bruening (2001) and Gray and Walter (2001) found that colleges and universities are closing traditional CTE teacher training programs at an alarming rate. These studies are now over 15 years old and the number of colleges and universities that offer undergraduate or graduate degree programs in any discipline area of CTE have decreased even further since 2001. Colleges and universities may offer traditional or alternative CTE teacher certification pathways, but all 50 states now offer an alternative pathway similar to the Indiana Workplace Specialist requirements outlined above (Zirkle, et. al., 2007).

Alternative pathways to teacher certification for CTE instructors are enticing to faculty new to the profession, as they do not have to spend four years in a traditional university teacher preparation program. In many cases, the state requires all first year CTE teachers to complete coursework that is focused on pedagogical issues including curriculum development, instructional strategies, formative and summative assessment, students with special needs, and standards-based reforms and accountability. Profiles of teachers who take alternative routes to certification have been completed at the national level (U.S. Dept. of Education, 2009). Findings indicate that nearly half of those entering teaching through alternative routes would not have done so if an alternative to traditional teacher education programs had not been available. Clearly, alternative routes to teacher certification are attractive to many demographics and this trend continues nationally, as seen in states that have completed research on alternative teacher certification (Feistritzer, 2008; Chin and Young, 2006).

The Indiana CTE Teacher Training Model

A consortium consisting of Ball State University, Indiana State University, Purdue University, the Indiana Association of Career and Technical Education Districts (IAC TED) and the Indiana Department of Education (IDOE) has been administering the Workplace Specialist I (WSI) teacher training program for over 20 years. The purpose of the project is to deliver teacher training services for qualified, occupationally competent individuals that allow them to meet requirements of the WSI certificate. Since early 2000, the entire Indiana WSI teacher training program has been delivered asynchronously online.

Rules for the Indiana WSI Certificate were adopted in 2006 and on January 1, 2009 the Workplace Specialist teaching certificate replaced the Occupational Specialist teaching

certificate. These rules specify the conditions of first year employment and advancement to the Workplace Specialist II. Among the requirements are (1) a 45 clock-hour teacher training program conducted during the first year (commonly known as the WSI teacher training program), (2) a mentor program, (3) a professional development plan, and (4) basic skills testing (Indiana Department of Education, 2011).

In January of 2013 the aforementioned consortia submitted a grant application to the Indiana Education Roundtable to completely revise, design, reengineer and implement an online teacher training program for all new Indiana Career and Technical Education (CTE) teachers. As per the stipulations of the grant, IACTED served as the lead non-profit grantee and the remainder of the organizations listed above served as partners in the consortia.

Since 1988 the Indiana Department of Education (IDOE) has contracted with the aforementioned consortium in the amount of \$74,999 to provide annual services for providing teacher training to all first year WS I faculty in Indiana. Usually there are 75 to 100 WSI faculty trained annually. While this amount was adequate for maintaining the current program, it did not allow for research, revisions, updates, and redesign to include the latest curricular development, pedagogies, technology and assessments for the online WSI teacher training program.

Research-Based Design, Development, and Delivery of the New Indiana WSI Teacher Training Program

While it is very difficult to predict specific long term outcomes and return on investment, what is known is that enrollment by students in Indiana CTE courses has increased by 96% since 2005. According to the Indiana Department of Workforce Development (2012) and the Indiana Department of Education (2012), there were 96,034 students enrolled in at least one CTE course in 2005 and by 2012, there were 188,017 students enrolled in at least one CTE course. Clearly, there is an upward trend in CTE enrollment and clearly, Indiana will need more CTE faculty to teach CTE students. The creation of a high quality first year experience for WS I faculty is imperative to recruit, retain and reward the best and brightest who choose to make CTE a career.

Research is clear that effective teachers are critical to student success in the classroom (Aaronson et al. 2003; Chetty et al. 2011), yet little is known about the best strategies to identify, attract, train, and support such teachers. The need for effective teachers is especially acute in schools serving low-income students who already face numerous disadvantages (Monk 2007; Jacob 2007). These schools face particular difficulty attracting qualified teachers to teach secondary STEM classes (Ingersoll and Perda 2009; Ingersoll and May 2012). While Indiana has been successful in the creation of a network of CTE centers serving Indiana schools, it is important to understand that CTE courses are also offered by WSI faculty at the Indiana Department of Corrections and Ivy Tech Community College. WSI faculty serve underrepresented minorities and underserved geographic areas throughout Indiana.

A recent report by Presley and Coble (2012) for the National Science Foundation developed critical questions that all teacher training programs should ask. They wanted to identify the most critical components or indicators of quality programs. Amongst the four themes that emerged from interviews and focus groups, two were most relevant to this proposal and are introduced below. Each highlights key elements of teacher preparation embraced by this project in an effort to meet the needs of underserved schools:

Theme # 2: Clinical Preparation

- *Consensus Statement: Learning to teach should primarily be a clinical practice thoroughly grounded in the realities of schools and classrooms.*
- *Well-sequenced and well-supervised clinical experiences should provide teacher candidates with realistic experiences upon which to base their decisions to pursue teaching and, for those that do, to prepare them well for the realities and the possibilities of teaching.*
- *Teacher candidates should be engaged in and experience the art and craft of teaching early and often.*
- *Recognized master teachers and teachers-in-residence should play a key role in the clinical preparation of teachers.*
- *Clinical experiences should be in a range of grades in schools that closely mirror where teacher candidates' ultimate placements will likely be.*
- *There should be strong support for program completers through their critical induction period into teaching.*

Theme #3: Knowing and Teaching Disciplinary Content

- *Consensus Statement: Teachers need to both know the discipline they are teaching and have the pedagogical skills to teach it, requiring deep collaboration between education and disciplinary departments.*
- *There is no one best program design. But all programs must be rigorous and accommodate students at different points in their education, their lives, and their financial circumstances.*

- *Pedagogical content knowledge needs a more prominent place in program design and should be blended into the instruction of content courses.*
- *Out-of-classroom experiences help teacher candidates gain an understanding of the nature of the discipline beyond what they can acquire in classes.*
- *Education and disciplinary faculty, along with master teachers and teachers-in-residence, need to create strong partnerships.*
- *No matter the discipline of training, teachers need to be able to make cross-disciplinary connections in their teaching.*

Utilizing the above themes, this project ensured that the WS I teacher training program was research-based, redesigned and updated using input from all consortium members, previous mentors, previous program participants, and recent CTE research. The Indiana STEM Teacher Recruitment Program (Section 246. IC 20-27-14) was a perfect opportunity to reengineer the training program and make Indiana a national leader in alternative certification for first year CTE faculty. This manuscript focuses on the research-based revision, processes used and lessons learned during those processes.

The Redesign and Reengineering Processes

After formulating the research-based framework for teacher preparation (Presley and Coble, 2012), members of the consortia began the strategic planning process by researching the latest findings on CTE teacher training. After examining what other states were doing in terms of CTE teacher training, researching best practice from the National Research Center for Career and Technical Education, and meeting with representatives from the Southern Regional Education Board (SREB) to discuss their research-based CTE teacher preparation model, the consortia decided to get additional feedback from specific Indiana stakeholders. After an initial content analysis was performed by the STEM Education Research Institute (SERI) at IUPUI, it was decided that the current Indiana model should be compared with the SREB CTE Teacher Preparation Project to help determine gaps.

Working with IDOE and IACTED to develop surveys for former WSI program participants (CTE teachers and mentors) and Indiana CTE Directors proved to be an excellent strategy. A survey designed to determine content priorities for the new WSI teacher training project was disseminated by the STEM Education Research Institute (www.seri.iu.edu) and results were analyzed and presented at the Indiana Association of Career and Technical Education conference during the Fall of 2014. Additionally, during the Spring and Fall of 2014, the consortia presented at numerous quarterly meetings of IACTED that were attended by IDOE members. These presentations served as data

gathering, information presenting and question and answer sessions that proved very helpful in the strategic planning process.

The survey results guided the consortia as they developed the Unit topics for the reengineering training. The topics listed below were developed as a result of the research and survey results:

- *Unit 1: Orientation and Personal Page*
- *Unit 2: Classroom Management and Procedures*
- *Unit 3 and 4: Special Education, Diverse Learners and Cultural Competence*
- *Unit 5: State and National Career Pathways*
- *Unit 6: Standards Based Objectives*
- *Unit 7: Assessment*
- *Unit 8 and 9: Instructional Planning*
- *Unit 10: Instructional Planning Follow Up and Reflection*
- *Unit 11: Integrating Academics*
- *Unit 12: Instructional Materials and Resources*
- *Unit 13: Advisory Committee's and CTE Student Organizations*
- *Unit 14: Professional Development Plan*
- *Unit 15: Wrap-Up*

After making the research-based instructional unit topics public and gaining support from various stakeholders, the consortia developed a preliminary Unit number, title, survey question and faculty champion matrix. Faculty and graduate assistants at Ball State University were responsible for development, design and completion of Units 1, 2, 6 and 14; faculty and graduate assistants at Indiana State University were responsible for Units 5, 11, 12 and 15 and faculty and graduate assistants at IUPUI were responsible for the remainder of the Units. The consortia developed a Unit format that included the following:

1. *Video Introduction: (Voice Over) Go through each step of the Unit – less than 5:00 minutes*
2. *Standard Based Objective (SBO)*
3. *Readings*
 - A) *Required*
 - B) *Suggested/optional with a little intro for each.*
4. *Best Practice Videos:*
 - A) *CTE Director* B) *CTE Teacher* C) *Community Member and/or* D) *CTE Student*
5. *Written Assignment:*
 - A) *Include all assignment information here.*
 - B) *Make sure that specific headers for the assignment are included with a brief description below the header for exactly what the students are to include.*
 - C) *Include a sample of the written assignment as an example.*

6. *Group Discussion:*

A) Provide no more than 2-3 focus questions germane to the topic of the Unit and then have a link to the Group Discussion Board.

7. *Checklist:*

A) Prepare a checklist for the student to use to be sure they have included all aspects of the assignment. A template for the checklist will be provided for students to utilize.

8. *Perform a “usability test” to determine if each Unit is functional, intuitive and user friendly. Use graduate or undergraduate students to go through the entire Unit and make comments.*

Work on the 8 steps necessary to create a Unit began in earnest in the late Fall of 2014. Each consortia member used a similar process when developing Units that included completion of research on the topic, development of standards based objectives, research and development of required and suggested readings, development of a written assignment, development of an online group discussion and development of an assignment checklist. The consortia consulted online instructional designers at Ball State University and IUPUI and it was decided that the structural framework for the instructional unit should be developed first. Then, best practice videos were developed and finally a video introduction was prepared. After a rough-draft of each element of the Units was completed, a “usability” test was performed using graduate and undergraduate students.

There were a number of face to face and asynchronous meetings during the development period between all consortia partners, but especially between representatives from IUPUI, ISU and BSU. As this was a complex project that involved no fewer than 10 members to develop Units, it was important that benchmarks be set and progress be measured and aligned. Ultimately, a single project manager from Ball State University was appointed to ensure quality and productivity as other partners completed work. As of this writing, the project will be ready for the 2015-16 WSI teacher training that begins in August of 2015.

The evaluation of the entire project will be completed by SERI and focuses on the goals and outcomes of this proposal and the indicators of program success as specified in the request for proposals. Specific research questions (Table 1.) were designed accordingly. The evaluation was and will be both formative and summative. During the 2014-15 academic year the WSI program continued with current practice and students completed the existing survey, developed by the consortium, and provided to all WSI students. As new materials were designed and produced for the 2015-16 academic year, they were pilot tested through this evaluation providing formative data to the program staff. Below are the guiding research questions, outcomes, data source and data collection methods that will be used for evaluation purposes.

Table 1. Program Evaluation Design.

Research Questions	Outcomes	Data Source	Methods
<i>Q1: Do WS I participants feel more connected to the curricular materials, their peers, and instructors through the use of the revised curriculum when compared to past cohorts?</i>	Increased learning and retention in the program.	Teachers	Program evaluation surveys
<i>Q2: Are the new WS I modules enhancing participant learning of the given content of the modules including pedagogy for CTE, development of course materials, classroom management, creation of evaluation materials, and integration of academic skills in their CTE classroom?</i>	Enhanced learning and increased instructional and classroom skill mastery.	Teachers	Pre- and Post-test
<i>Q3: Does the new WS I program facilitate career retention?</i>	Increased retention in program, increased retention in teaching, & number of years of planned teaching in Indiana schools	Teachers	Survey, licensure information
<i>Q4: Does the new WS I program facilitate participant recruitment?</i>	Increased number of individuals participating in the WS I program	Participants	Enrollment information
<i>Q5: Are WS I teachers who have gone through this program prepared for their teaching experience?</i>	Higher teacher ratings and increased student learning opportunities	Teachers & Students	Principal and mentor observations/evaluations, see also Q3
<i>Q6: Do students of new WS I have increased learning outcomes and opportunities?</i>	Increased or continued industry certification options, dual credit opportunities, and STEM courses offered.	Students	Survey

Evaluators worked with program staff to provide the necessary data for both the development of the modules and their outcomes as well as for reporting purposes. Regular communication between program staff and the evaluators happened during both program development and implementation to provide ongoing feedback of the program implementation and its early and ongoing impacts.

Lessons Learned

Large, complex projects involving multiple institutions and multiple stakeholders can be challenging. This project was no exception. Instructional designers often use some version of the ADDIE Model (Analysis, Design, Develop, Implement, Evaluate) according to research (Gagne, 2013; Dick, 2012; Morrison, Ross, Kemp and Kalman, 2010) and this project was no exception. However, in an effort to make sure that the

Indiana WSI teacher training program met the needs of adult learners in an online setting, some challenges arose. The consortia learned that with today's technology being available to all students and faculty regardless of time and place, there was a need to think of this project differently. We wanted, and the literature supports (Nair, 2014), that active, experiential and collaborative learning is something important to adult learners, and that whenever possible, learning in context was vital to each Unit developed. In an attempt to ensure that all learning was flexible, customized and iterative for novice CTE faculty, the consortia learned some valuable lessons about the process used to create a high quality, online, adult learner focused program.

Time is of the Essence:

The major challenge for this particular project, as is often the case, was time. The original timeline for this project is below:

Nov. 2013 through August 2014: Begin strategic planning process with all members of the consortium and their representatives to develop a plan to research, redesign and reengineer the WS I Teacher Training Program. Begin redesign of all instructional units. Begin development of mentor program revisions. A blank HTML based website with a functioning navigation structure will be developed. Portals will be added to the WS I website for IRS-W9, Mentor Teacher Conference Records, Teacher Observation forms, and Mentor Observation forms. Mentor details will be added to the new WS I website, such as pay structure, expectations, guide/training, registration process, and withdrawal process. Formative and summative project evaluation will be developed with an outside vendor, and those evaluation tools will be used to create a longitudinal tracking system for WS I and II faculty in Indiana and CTE student achievement impact.

Sept. 2014 through January 2015: Visit CTE centers throughout Indiana to get video of various best practices to support instructional redesign. Complete editing of all web-based, multi-media, reusable learning objects and create high quality products for all elements of the WS I teacher training program. Work with graduate assistant(s) and consultants to develop the learning website. Policies and procedures relating to mentorship will be added to the WS I website. Beta test all instructional units and develop them based on a single template for ease of use and consistency.

Feb. 2015 through Aug. 2015: Finalize development of WS I teacher training modules. Work with graduate assistant(s) to prepare "go live" for July, 2015. From May 5, 2015-May 10, 2015, the completed WS I website will be beta tested for functionality and ease of use. The website will be revised based on the feedback during the test. Project evaluation is completed.

Unfortunately, the grant was not fully executed until November of 2013. Nearly five months of valuable time was lost as consortia members did not have the funding or the certainty to begin stakeholder development and input. By the time all sub-awards from IACTED to the 3 universities were signed and fully executed it was January of 2014. While some technical and strategic planning was completed during the time period from

November of 2013 to January of 2014, this project was nearly 8 months behind when work started in earnest.

Luckily, the consortia had been delivering the existing WSI training program for many years and all consortia members had developed personal and professional relationships over that time frame. Not only is time of the essence, but trust and relationship building is important for large scale reengineering of instructional units to be redesigned. With complex projects such as this one, it is important to know those you are working with and to trust that they will get their portions of the job completed to specification. Fortunately, that was the case for the consortia. Being nearly 8 months behind schedule from day 1 of this project was certainly a challenge, and certainly the benchmarks, calendar and timeline had to be altered, but due to the fact that the consortia members had worked together for many years, this element of the project was not ever seen as an insurmountable issue. It was a challenge, but never an obstacle that was unable to be overcome.

Stakeholders and Research Matter:

This element of the project was absolutely crucial to success. It was imperative that the consortia reach out to numerous stakeholders to ensure that they could provide input and feedback from the very beginning of the process. Certainly the WSI program is important to the CTE teachers it serves and their input was imperative, but it is also very important to CTE leadership in Indiana. CTE Directors and principals want the highest quality faculty available and the WSI program must supply those faculty, for all CTE schools, especially those located in high needs school districts. The universities that provide the actual training are also very conscious of teacher training, and as CTE teacher training has traditionally blazed the trail for alternative certification, universities are being watched carefully as they reengineer teacher preparation programs all over the country. Finally, the Indiana Department of Education, Indiana Commission for Higher Education and the Department of Workforce Development also have high expectations for teacher training, and in the politically charged state of Indiana, any program revision would be foolish to not be open, honest and transparent with all of the aforementioned entities.

The single most important thing paramount to the success of this project was the formation of the consortia prior to making application for the grant. The consortia represented all stakeholders and most importantly, the process used by the consortia was open and transparent. No process or product was developed in secret or with a hidden agenda. All stakeholders agreed that it was time to reengineer the WSI teacher preparation program, but none had more stake or ownership than another. The value of the consortia was that it allowed the process to unfold without creating “winners and losers.” While the history of the existing WSI program was respected and the best parts of that program were embraced, it was clear to all stakeholders that the old program needed a structural overhaul that must include research-based best practice, the highest quality instructional technology and buy-in from all stakeholders.

The research-based elements really mattered to all stakeholders and recent research from the National Research Center for Career and Technical Education (NRCCTE), and meeting with representatives from the Southern Regional Education Board (SREB) played a key role in the revision of the instructional Units. As a matter of fact, nearly 7 months were spent researching best practice, meeting with representatives from NRCCTE and SREB to gather data. One consortia member from IACTED was sent to an SREB conference to learn more about how other states were using the CTE Teacher Preparation program in their states. While this process was in full swing, the university members of the consortia were working with the STEM Education Research Institute (SERI) at IUPUI to create a stakeholder survey that led to a matrix comparing existing Indiana WSI curriculum to SREB developed curriculum. As soon as data were discovered and content analyses were complete, reports were provided to all stakeholders at IACTED meetings and via email. Final products were clearly research-based and embraced best practice in CTE at all levels.

Finally, after significant stakeholder input, survey results and numerous dissemination on the part of all consortia stakeholders, there was agreement on which CTE topics to cover, how to create Units and how to deliver Units for a reengineering WSI program. Certainly, there were disagreements during the months long process, but rarely were those disagreements so intense that consortia members could not continue work. Because of the open and transparent process, and the ability for all stakeholders to have meaningful input, it was clear that compromise could be reached as a result of the trust that had been built early in the process.

High Quality Evaluation is Critical:

Another important element of the success of this program was that we developed a relationship with the STEM Education Research Institute at Indiana University Purdue University Indianapolis (IUPUI). The request for proposals for the grant required an external evaluation, and the consortia decided that it would be a good thing to find the external evaluator prior to submitting the proposal. As one consortia member was a faculty member at IUPUI it was logical to work with SERI.

After discussing the goals of the project with the consortia members, it was decided that SERI would develop both formative and summative evaluations. The existing WSI program was still in existence during the 2013-14 and 2014-15 academic year. SERI was asked to develop evaluation materials to compare the results of WSI participants from 2014-15 to 2015-16. Realizing that the grant ended in 2015, the materials that SERI develops for the comparison will be provided to the consortia. If the consortia has funding for SERI to do the comparisons, then that is what will happen. If not, then the consortia can perform the comparative analyses. SERI also worked with the consortia to perform a content analysis on existing CTE research-based best practice for teacher preparation. This formative assessment helped set the stage for instructional design and development of the Units. The early relationship between SERI and the consortia helped build trust and set the stage for high quality program assessment and evaluation.

A total of six research questions were developed with the blessing of the consortia, and outcomes, data sources and data collection methods and analysis were discussed openly with consortia members. Regular communication between SERI leadership and staff and consortia members occurred during program development and implementation and ongoing feedback was provided in both directions as the Units were designed, developed and reengineered.

The fact that early adoption of high quality program assessment and evaluation was a part of the culture of the consortia was very important to building trust with stakeholders. All good projects should begin with the end in mind. Too often assessment and evaluation are afterthoughts when making application for funding to complete large-scale, complex, change-oriented projects. That was clearly not the case in the reengineering of the WSI teacher preparation program, and it seemed to be an asset to the entire consortia and all stakeholders throughout the grant process.

A Single Project Manager is Crucial:

The single most important lesson learned from this complex project was that at some point, consensus-based decision making must stop and a single project manager must take over the project. The consortia made application for the grant as a team, reached out to various stakeholders as a team and attempted to make decisions on the reengineering of the WSI teacher preparation program as a team. This process worked for the “big picture” items that needed stakeholder input and buy-in. This process was less effective during the development of the Units and the build of the online course management site.

After some back and forth between the university consortia members who were developing the Units, and the instructional designers who were responsible for the look and feel of the revised WSI website, it became clear that a single project manager should take over the project and have executive decision-making power. This was an easy decision for the consortia to make, as the website was going to be hosted by a single university member of the consortia. That university had resources and a very good instructional design team, so it was natural that this university consortia member would take responsibility for managing all aspects of the project. This happened towards the end of the project when it became clear that time was of the essence. The transition from a consensus-based decision making process to a single project manager with decision-making power was seamless and natural due mainly to the trust that had been developed within the consortia.

Conclusion

The WSI teacher preparation project is now on target and will be unveiled in August of 2015 for the 2015-16 group of CTE faculty. A rough draft will be revealed to consortia members and other stakeholders at the annual IACTED meeting in June of 2015. This will allow for one additional round of feedback, and one additional round of editing before the go live date in August of 2015.

The lessons learned throughout this process include the fact that time is essential to create a high quality product. Certainly, there must be a period of stakeholder input and research to create trust that the project has no hidden agendas and that the process is open, honest and transparent. This consensus-based decision-making process takes time, which is often at a premium when working on a complex reengineering of an online training program that includes many partners. However, when decisions are based on the latest and highest quality research in the field, the time it takes to move the project forward is worthwhile. Finally, it is important to begin with the end in mind, and develop a high quality project assessment and evaluation for any complex project. Both formative and summative assessment should be a part of the evaluation process and the fact that the consortia worked with the assessment team from the very beginning of the project made things seamless throughout.

It is crucial for large scale projects with multiple partners to realize when it is time to move from a group-based, consensus-based, decision-making model, to the appointment of a single project manager which ultimate decision-making power. Had this not happened in this case, it would negatively impacted the project time to completion, the trust and partnership mentality built within the consortia and project assessment and evaluation process.

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