Final Report to FIPSE for P116B040216

TEGIVS: Teacher Education Goes into Virtual Schooling

Introductory Overview

Teacher Education Goes into Virtual Schooling is a project led by Iowa State University's (ISU) College of Education Center for Technology in Learning and Teaching (CTLT). Project partners include teacher education programs in the University of Florida (UF), the University of Virginia (UVA), and Graceland University (GU) and a virtual school, Iowa Learning Online. The original consortium is intact in its partnership and all partners remain active. Appendix A1 lists project collaborators and their institutions.

The goal of the project is to prepare preservice teachers in U.S. teacher education programs to implement effective Virtual Schooling (VS) curricula in three roles: facilitator, teacher, and/or designer. The three complementary strategies on which the project is based to address the overarching goal of building a preservice model for preparing virtual teachers are: (1) identifying and building competencies, (2) developing tools to support virtual teacher education, and (3) creating and scaffolding a national community of VS practice. The integration of VS was piloted and remains in sustained operation within all four teacher education programs. Both the formative and summative data collected confirm the accomplishment of all objectives. Findings indicate improvements in the quality of teaching and learning through the inclusion of VS in preservice teacher education as well as effectiveness of VS curricula on the preparation of future educators. The external evaluator M.D. Roblyer concluded the final evaluation report on page 27 as follows:

> Results of the summative evaluation, documented in this report, indicate that the TEGIVS Project has met the ambitious challenge of providing an innovative program of resources to help prepare future teachers for virtual schooling. Evaluation data show that all three project objectives have been largely achieved. These data will be an especially helpful guide for future development work as project personnel endeavor to build on this successful beginning and revise materials and strategies based on evaluation findings. As the world's education systems look to a future that is increasingly dependent on distance design and delivery methods, an increasing number of teachers must be prepared who can succeed and help students achieve in the virtual classroom. The foundation provided by this project supplies essential information and direction on how to make teachers ready to enter the "school that technology built" (Davis & Roblyer, 2005).

This final report covers 4 years progress from the beginning of October, 2004, through July, 2008, and describes progress made on each of the three project objectives (see milestones list in Appendix

A2). The report concludes with overall project summary and recommendations to practitioners who have an interest in innovative projects in post secondary education.

Problem Description

Virtual schooling continues to rise in both popularity and importance and has become part of legislated school reform and improvement in many states. In 2001, The North Central Regional Educational Laboratory (NCREL) surveyed 44 web-based Virtual Schools regarding their current trends and issues. They concluded that the trend for more K-12 schools adopting VS was increasing. NCREL projected that 40,000 to 50,000 K-12 students would enroll in VS in the 2001/2 school year. Of the 44 VS organizations surveyed, the grade levels where virtual courses were offered included (100%) high schools, (51%) junior and middle school, and (27%) elementary schools. One in four offered courses across almost the entire K-12 spectrum. The 2004 National Technology Plan for Education included VS and, because many virtual schools serve students challenged by circumstance (including location and heath), improved VS can support the federal No Child Left Behind Act. Since then VS has grown exponentially and it has spread across more states in the US and internationally (Watson & Ryan, 2007; Roblyer 2008, in press).

Teacher competence is a key component of K-12 student success, especially for those challenged by circumstances. Professional development for teachers has mainly been provided by virtual schools offer for their own teachers and other staff to adapt their practice for teaching and course creation. Research in K-12 VS shows that a 'distant' teacher should be complemented with a VS site facilitator (Davis & Niederhauser, 2007, see Appendix A3). That is, good practice in VS has local as well as distant components, making it important that all K-12 teachers become competent in this rapidly developing facet of K-12 education. New teachers are probably among the most adept at adjusting their approach to applying technology to fit the needs of the new generation of learners. In addition, the context of VS provides significant challenges to teacher education. Virtual schools do not have physical premises to visit because courses, classrooms and their management have been adapted with technology specifically to disperse teachers and students for some or all of their time in VS. The challenges to teacher education included how to expose examples of effective VS so that preservice teachers may study the whole educational process and how to provide guided observations and effective clinical mentoring skills in developing practice in real situations. Therefore, the provision of a model VS teaching and learning, virtual tools and curriculum resources in preservice teacher education programs (TEP) accompanied by appropriate assessment for a range of competencies was a very significant innovation. Recognizing this need, this "Teacher Education Goes into Virtual Schooling" (TEGIVS) project has created model for US

teacher education programs to prepare future teachers for effective VS and established a nationwide community of practice to promote VS within teacher preparation.

Background and Origins

Local to this project statewide VS organizations include the influential Florida Virtual School (FLVS) with 75 courses offered in 2003/4 and it is affiliated with all 67 Florida school districts, many with highly diverse populations including a large Spanish speaking population. This school has expanded each year and FLVS is now a school region on its own. In Iowa, the Iowa Learning Online initiative was established as an important influence on K-12 practice. Most secondary schools and many elementary schools in Iowa have students who take part in VS through the Iowa Learning Online initiative. Since its inception over a decade ago, the medium of videoconference has been promoted through the Iowa Communications Network (ICN) and this is now blended with online course management software. The state of Virginia also has developed strong VS service to K-12 from community colleges. A statewide survey of VS students in 2002 showed that the range for VS is increasing and this has also continued in its growth.

Both ISU and UVA have won awards from professional associations (e.g. ISTE, AACTE and SITE) for integrating technology into their TEPs. At ISU good practice has been further developed with many model applications of technology integration that enhance learning and teaching. Many of the technology integration strategies were developed as part of the federal initiative to Prepare Tomorrow's Teachers to use Technology (PT3). ISU's Center for Technology in Learning and Teaching (CTLT) PT3 project called TechCo focused on Goodlad's (1994) theory of simultaneous renewal, which became evident between the university and partner K-12 schools.

ISU started to incorporate aspects of online education into its undergraduate program in 2000 with the redevelopment of the optional distance education course (CI 407) with a case-based project-based approach incorporating service learning (Davis & Nilakanta, 2003). CI 407 remains part of the well-respected ISU minor in educational computing and graduates of this minor often become leaders of technology in K-12 schools. UVA started to incorporate the study of online learning in 2003 with the introduction of an optional graduate course similar to CI 407 at ISU.

Project Description

This project proposed and integrated a comprehensive VS curriculum for the first time into four diverse programs of preservice teacher education. The three complementary strategies on which the project was based to address the overarching goal of building a preservice model for preparing virtual teachers are as follows:

I. VS Curriculum development and assessment in teacher education to map VS into appropriate places within four leading TEPs through adaptation of selected courses accompanied by assessment of competence against national standards. Evaluation provided scientific-based evidence from multiple sources of data including assessment of the educational outcomes. Four diverse TEPs incorporated VS with appropriate assessments for three roles, namely VS1: VS Site Facilitator; VS2: VS Teacher; VS3: VS Designer. This was underpinned by strategic professional and organizational development.

II. Three web-based interventions (tools) to expose VS were created, namely: T1: two versions (secondary & elementary) of a virtual lab that included archived cases; T2: a tool to support access VS activities for field experience; and T3: a tool to facilitate supervision and mentoring. Building on prior software, the tools permitted engagement with VS practices from multiple perspectives: K-12 student, VS site facilitator, VS teacher, VS designer, and university supervisor. Cases and tours of VS were collected and developed for use with these tools in collaboration with virtual schools, including *Iowa Learning Online* and *Florida Virtual School*.

III. A national community of VS practice in teacher education was developed through consortium partnerships, the project Web site, project brochure (see Appendix A4) and project work online in several course management systems, as well as engagement in over 20 conferences to facilitate the adoption of VS into teacher education. In the final year 2007-2008, conference presentations were targeting technology-using teacher educators through the Society for Information Technology and Teacher Education (SITE), teacher educators more generally through the Association of Teacher Educators (ATE), distance educators through the North American Council for Online Learning (NACOL) Virtual Schooling Symposium, as well as state conferences and local workshops. Project publications include four papers in academic and professional journals and an 'issues brief' on professional development for NACOL (see Appendix A5). A wide range of VS curriculum materials and tools have been made available to programs through the project's public web site and there is evidence of their uptake by teacher education programs in several states. Curriculum, cases and evaluation instruments are also being shared through the Association for the Advancement Computing in Education (AACE) digital library archive with a Creative Commons license. Thus the project's innovative practice and community has already started to facilitate incorporation of VS for TEPs across the US (over 1,000 programs). At the core of the national community is the continuing health of the partnership between the four core partners led by ISU.

This is now described in more detail structured by the four curriculum innovations. As expected, each of the four diverse partner teacher education programs integrated VS preparation in different ways. During the project all four TEPs adopted and adapted VS into their programs (see Appendix A6). For example, although three of the four programs had a specific introductory course that adopted a version of the TEGIVS lab tool, Graceland University integrated instructional technology required that VS be

introduced in a methods class and this required a different adoption of the curriculum. With regard to the delivery mode, the courses also varied and most became blended with both face to face and web-based modes. Therefore, each teacher education program developed VS curricula using up to four main strategies with associated resources. The first strategy was applied as an introduction to VS for all students, whereas the second, third and fourth strategies were optional additions adding more depth for some students, including those specializing in technology. There were four curriculum innovations:

1. Lab and lecture or seminar within the course that introduces instructional technology (or a VS theme within a methods course)
2. Pre-student teaching early field experience in collaboration with a virtual school and/or a practicum
3. An optional course in flexible and distance learning
4. A VS theme within an optional course in instructional design

These innovative VS strategies are now described briefly. Detailed descriptions may be found in a range of publications produced by the project and on the project website (also available on CD: see Appendix A7).

1. Lab and lecture or seminar within the course that introduces instructional technology (or a VS theme within a methods course)

In common with good practice all four teacher education programs introduced student teachers to information technology along with instructional design and challenged them to develop skills and knowledge for their future educational contexts (see Appendix A16 for Team A - VS Site Facilitator report). In Iowa State University in 2005 the equivalent of one week in a fifteen week course was changed to focused on virtual schooling and related issues in the face-to-face sessions. The topic was introduced in an hour long lecture and that week's two hour lab applied the relevant lab, which ended with a presentation by small groups of 2-4 students followed by a plenary discussion reviewing the benefits and challenges of virtual schooling. The students were also required to write a reflection on virtual schooling and elementary students had the option of developing this work into one of the artifacts in a required electronic portfolio. The innovation was refined in 2006 with a second lab tool more suitable for elementary students (see Appendix A8 for the secondary syllabus, CI 202, and Appendix A9 for the elementary syllabus, CI 201).

In the University of Virginia although the grouping of the introductory courses was according to content and phase even more tightly than in ISU, the course had some similarity to a methods course in which TEGIVS elementary and secondary labs were both the piloted successfully. In the elementary pilot, the TEGIVS elementary lab tool was adopted by two elementary sections (total of 33 undergraduates plus 5 graduates) by moving the entire class session online and using existing discussion tool and class Blogs. The class was directed to use the TEGIVS Elementary Lab, to discuss the two scenarios plus a requirement to reflect overall impressions of VS in the student's own Blog (see Appendix A10 for EDLF 345: Teaching with Technology-Elementary and Special Education Course Syllabus).

The University of Florida course had the lecture portion online and then students used the secondary lab tool in their on-site lab class starting in summer 2005. This course required least adaptation and professional development. Given the relevance to the online mode of instruction, the virtual schooling session was moved earlier in the semester over time (see Appendix A11 for EME 2040: Introduction to Educational Technology Course Syllabus).

Graceland University did not have an introductory course, so secondary methods course was chosen to introduce virtual schooling as a theme along with other education issues. VS was introduced early in the course with readings that raised issues relevant to many aspects of twenty-first century schooling. Towards the end of the course students undertook the secondary lab to promote deeper reflection on classroom management. Subsequent offerings added a VS teacher as a virtual visiting speaker and an element of assessment on VS.

2. Pre-student teaching early field experience in collaboration with a virtual school

Teacher preparation programs are normally required to introduce future teachers to a range of educational contexts. In Iowa the number of hours in the field is increasing from 50 to 80 and students are encouraged to experience rural, city and suburban schools. To this the project added virtual schooling and this brought particular challenges because the students and teacher were not in one venue. At ISU field experience is a course that takes place over a semester. Following some preparatory seminars the student is placed with an educator (a teacher or a technology coordinator) in a school to observe and undertake small tasks for 12-24 hours. The university supervisor guides and assesses the student teachers' reflections on the processes of education facilitated by the collaborating educator. The K-12 educator also completes a report on each student teacher's performance. This course is taken repeatedly in different contexts as many times as the student wishes, although the preparatory seminars are only required for first time students take the course.

This field experience course was adapted in two ways in order to incorporate virtual schooling: The first innovative adaptation was to the preparatory seminars and an assignment. Three seminars were

changed to an online environment that introduced virtual schooling with a small set of professional readings with a required response from each student. These responses were used to promote online discussion along with a second set of readings. Having established the integration of VS the final reflective assignment was adjusted for all students; they were required to investigate VS in their K-12 placement and reflect on its relevance to 21st century schooling (see Appendix A12 for CI 280A: Pre-Student Teaching Experience Course Syllabus).

The second adaptation introduced the option of a placement with an educator in a virtual school as all or part of the early field experience (10-24 hours) and it is described in detail in a forthcoming paper Davis, Compton and Mackey, submitted (see Appendix A18). An exemplary online teacher who has also been a mentor for student teachers in her traditional high school was the cooperating teacher (mentor) in this field experience. This field placement was accompanied by several innovative strategies to make VS accessible to the student teachers and their VS cooperating teacher. An online course was created to structure access to a range of resources, and ISU pilot offerings provided evidence that the VS field experience dispelled misconceptions held by the student teachers (Davis et al, submitted). This course adaptation continues to be offered, although recruitment has proved so far to be more difficult than expected (see Appendix A13 for CI 280VS and an additional graduate offering CI 590B: Virtual Field Experience Course Syllabi).

3. An optional course in flexible and distance learning

Iowa State University is unusual in having the option of a technology minor for future teachers. One of the three credit courses in the minor is CI 407 "Flexible and Distance Learning", which was developed to incorporate VS using a blend of face-to-face meetings and online in two course management systems. The course and its complement in the graduate degree program was redesigned and refined during the project to incorporate virtual schooling in four phases and accompanied by an assessed reflective journal. In the final version, the course was taught in three phases: learner, designer and finally teacher. During the learning phase students explored the TEGIVS materials with their own choice of scenarios and case studies so that each could develop an understanding of virtual schooling in their various content and phases and they were encouraged to reflect on and discuss the challenges they experienced as learners at the start of the course using tools of Blog and discussion in the university course management system (WebCT). The learning phase also included guest speakers and visits to distance learning facilities. During the second designer phase groups of 2-5 students took on the role of designer to create an online module of instruction of their own choice in a second course management system (Moodle). During the teaching phase, the class only met online and the students taught their unit of instruction to their peers. The course ended with a brief period of evaluation of both the students' units

of instruction and this course. Throughout the course students continued to reflect and discuss their experience and readings in WebCT, with the instructor prompting students to consider their experience and readings from the perspective of the current phase. Students were also encouraged to ask for clarification and further support, which was provided by the instructor and by peers (see Appendix A14 for CI 407: Principles and Practices of Flexible and Distance Learning Course Syllabus).

4. A VS theme within an optional course in instructional design

ISU has a course, CI 403, in instructional design within the technology minor for preservice teachers. In the final year of the project a VS theme was introduced and future teachers were supported to develop an online unit of instruction as the developed expertise in instructional design. This proved to be challenging due to the students' strongly held misconceptions about VS. The curriculum has been improved to strengthen this aspect before the course is offered again.

Obstacles and Challenges

This project was very innovative starting at a time when no standards had been set for VS teachers and the importance of the role of a VS site facilitator was not well understood. This delayed the production of the competencies and caused the project to change from cumulative levels of VS competence to complementary roles. In addition, the designer level/role had been a stretch from the start. This in turn made it more challenging to develop curricula and related courses. Two versions of the competencies and a rubric to evaluate the VS site facilitator role were produced and the work was completed in the fourth extension year. The North American Council of Distance Learning, with whom the project collaborated, developed VS teacher competencies during the third year and these were adopted by the project. In addition, the project came to recognize that preservice programs may only lay a foundation rather than provide full preparation for this new mode of schooling, because this is also true for teaching competence in general. The creation of the VS field experience was an additional a timely response to these challenges and remains the most innovative aspect of this project.

As expected, although all four teacher education programs adopted TEGIVS curricula, there was some reticence and this slowed the work and data collection. Reticence in UVA stemmed from an alternative approach that is content specific and technology-intensive with excellent results reported. This left little motivation for change, but it was eventually achieved by some instructors and all who adopted the materials became enthusiastic in their use. The Director of Teacher Education identified a gap in practice and became an enthusiastic supporter and advocate for VS in preservice teacher education. In a similar way, Graceland University found it challenging to adopt TEGIVS curriculum but did find the right place within a methods course and they plan to sustain that practice.

The development of the third tool proved to be the most challenging and more challenging that had originally been envisaged. Give the need to ease access and adoption across both preservice teacher education and teaching in virtual schools, a decision was taken to use tools that are available and overlay another technology alongside that already in use by the VS teacher. The overlaid technologies were video clips on the web, WebCT, internet-based chat and videoconferencing. The approach and curriculum created remained extremely innovative as described in Compton et al, (2007) and Davis, Compton and Mackey, submitted (see Appendix A15). Although the team specified a real simulation game to provide practice in VS, resources were not available to produce it. Therefore, we recommend that a VS simulation be created in future through which future VS teachers and facilitators can learn to 'fly' by developing their competence with simulated experiences of supporting students, teaching and designing courses.

Finally the challenge of archiving project resources in the AACE Digital Library was solved by writing a current practice paper for CITE online journal that accepts multimedia appendices. The paper's appendices will contain the tools and other resources produced by the project (Davis et al, submitted).

Evaluation/Project Results

TEGIVS project has already impacted over 900 future teachers, over 200 faculty and staff in colleges and it has impacted professional development for VS more widely. The resulting curriculum, guidance, and standards provide a model for over 1,000 programs across the United States as planned. Details are provided within the TEGIVS Final Evaluation Report in Appendix E and its appendices E1-12.

All three complementary objectives to develop and disseminate model practice in preservice teacher education programs have been achieved in a way that was successfully adapted to fit within each different teacher education program, as planned. These innovative courses and curricula have been evaluated during the project to improve the interventions and to provide endurance of their impact, including experimental trials. Table 1 shows the sustained uptake of TEGIVS curriculum implementation in four TEPs.

There were also unexpected additional beneficial impacts for the universities and virtual schools. VS was also incorporated in graduate programs in ISU and UVA, and virtual schools nationwide benefited through the project's collaboration with the research committee of the North American Council of Distance Learning (NACOL) and by collaboration with virtual schools, particularly Iowa Learning Online. Additional research and development was also undertaken by doctoral students and collaborating faculty, notably graduate assistants Lily Compton and Amina Charania.

Semester	Institution	Course sustained after this uptake
Spring 2006	ISU	CI 201 Introduction to Instructional Technology
		CI 280 Field Experience seminar introduction to VS
Fall 2006	ISU	CI 202 Secondary Section
	ISU	CI 201 Elementary Section
	UF	EME 2040 Introduction to Educational Technology (All majors included)
	ISU	CI 407 Flexible and Distance Learning
	UVA	EDLF 345- Introduction to Teaching with Technology
Spring 2007	GU	EDUC3520 – Secondary Methods and Content Reading
Fall 2007	ISU	CI 280A Field Experience VS experience in VS school
	ISU	CI 403 Instructional design

Table 1. The semester that courses in each of the four participating preservice programs started their sustained adoption of TEGIVS curriculum.

The national community of practice was achieved and it is also expanding internationally. The first community to be established was an internal one between the four collaboration TEPs and the evaluation team noted that it remained healthy throughout the project and continues. A national community of practice has also been established and there is evidence of uptake in a number of additional states, including Michigan and Nevada. The project has also developed strong international links and had a usually large number of publications, including 5 refereed journal articles and 10 published conference proceedings, which will continue to disseminate the project over many years.

Summary, Conclusions, and Lessons Learned

This project has proved that it is possible to include Virtual Schooling as an additional mode of K-12 education in the preparation of future teachers. In addition it has provided a model and a range of strategies and resources that may be adapted by any program in the U.S. The implementation uncovered a wider than expected need for this innovation, which also grew nationwide and abroad during the project's four years. Most of the unexpected challenges experienced were related to the fact that there was no standard practice in this field and that educators need preparation for multiple complementary roles. Our advice to practitioners interested in our project is to help yourself to our resources and adapt them to the ecology of your program, while also forming partnerships with Virtual Schools that parallel those you have with traditional schools.

The participants in "Teacher Education Goes Into Virtual Schooling" did change their views of the professional development required. Faculty and staff dispelled their misconceptions about VS, and adapted their knowledge and practice in professional development to incorporate and support the development of VS as an additional mode of schooling in the twenty-first century. Future teachers also dispelled misconceptions about VS and some became enthusiastic advocates, particularly those who participated successfully in a VS field experience. The leadership within the consortium also informed the field as they did so in collaboration with national and international societies for technology-using teacher educators and those involved in K-12 distance education. Virtual schools and others involved in VS became increasingly interested in supporting this work and accepting preservice teachers as potential recruits who will need further induction into this profession.

Practical barriers were those common to any innovative project that needs to change practice in post-secondary education, and the project leader provided a workshop to the FIPSE Project Directors' meeting on change theories that have informed the work of this very innovative

project. The recruitment of three diverse programs as early adopters in addition to the origination teacher education program worked well, and the project officer's additional requirement to evaluate and report on the health of the consortium was welcome. As a result few internal administrative or management hurdles were experienced and the project was stable enough to come to its planed completion a year after its project officer, Lavona Grown left FIPSE. In addition, the project was instrumental in supporting the profession to develop an understanding of the diverse complementary roles of educators involved in VS and related standards. Working with the profession allowed the project to share this work and increase its dissemination, which was unusual for preservice teacher education that more commonly lags behind in the development of innovative practice.

The project focused on a facet of distance education and it also developed more flexible and distance learning in post secondary education. One successful strategy was to move aspects of preservice teacher education online in order to give these future teachers experience of online learning during their teacher preparation program. This was done with ease and welcomed by students and their instructors, particularly when the instructors were also supported to innovate in online teaching with staff development and technology mentoring as planned.

The most important generalizable conclusions the project has led to are:

- When innovating in post secondary and K-12 education pay careful attention to the multiple ecologies involved and use change theories to inform developments (such as those described by Davis, 2008, in press). This should include the creation of resources that others are able to adapt to their context and content area along with permission to adapt them, e.g. using a Creative Commons license to clarify intellectual property and copyright.
- When the innovation involves a development of professional practice, work with professional associations, exemplary practitioners and their organizations to develop and disseminate widely held views of effective practice.
- Be prepared to adapt your evaluation methodology to the changes in understanding brought about by involvement with the innovation, while also maintaining rigor through the use of multiple sources of data and careful sampling. Use the evidence to refine the innovations. Later summative evidence of impact is also likely to spur wider adoption.
- When distance learning is involved, take care to look for multiple changes in practice including changes in the division of labor and responsibility within and across organizations. Innovation across organizations is particularly complex and seems to

require high maturity in both technological and pedagogical expertise as well as comfortable access to communication technologies.

- Use web-based technologies such as a public web site and also a private virtual space to support collaboration between those undertaking the innovations and also support them with mentoring, including technology mentors where relevant (see Thompson et al, 2006). Today additional social networking software such as a Blog and WIKI would also be valuable. Those leading and most involved the innovation should expect to put the largest percentage of communication into these media, while those new to the innovation are more likely to read rather than post their comments etc.

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Final Report Appendices

A1: List of project collaborators updated April 2008
A2: Project milestones, updated April 2008.
A3: Davis & Niederhauser (2007)
A4: Project brochure
A5: List of TEGIVS publications
A6: Progress in 4 Teacher Education Programs
A7: TEGIVS CD (mailed)
A8: CI 202 - Introduction to Instructional Technology Course Syllabus
A9: CI 201 - Introduction to Instructional Technology Course Syllabus
A10: EDLF 345 - Teaching with Technology-Elementary and Special Education Course Syllabus
A11: EME 2040 - Introduction to Educational Technology Course Syllabus
A12: CI 280A - Pre-Student Teaching Experience Course Syllabus
A13: CI 280/590B - Virtual Field Experience Course Syllabi
A14: CI 407 - Principles and Practices of Flexible and Distance Learning Course Syllabus
A15: Davis, Compton & Mackey (submitted) Virtual field experience in virtual schooling. *Journal of Technology and Teacher Education.*
A16: Team A- VS Facilitator report
A17: Davis et al (2007)
A18: TEGIVS Project Performance Narrative
A19: TEGIVS Project Final Evaluation Report

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Appendix E7 of A19	Results of Graduate Survey

Appendix: Comments for FIPSE

1. **What forms of assistance were most helpful?**
   As noted elsewhere Lavona Grow provided very effective support in the early stages of the project. She and the other project officers helped us to understand the financial and other project management aspects. Lavona also added a requirement to report on the health of the consortium and this was done effectively and probably added to the maintenance of that health.

2. **What should FIPSE staff consider when reviewing proposals in the future?**
   - Innovations in preservice teacher education can have a far reaching impact in post secondary education beyond teacher education programs, and in K-12 professional development. Consider supporting and increasing proportion in this preservice teacher education sector.
   - Distance education is giving rise to new ecologies within and between organizations and sectors, as indicated by this project. Expect more innovative proposals in this area of Virtual Schooling and other forms of flexible and distance learning, including professional development of administrators who are key to effective practice in K-12 schools as well as post-secondary education.
   - Virtual Field experience is a very relevant innovation for other educators, including administrators, and in other professions.
   - The tools team in this project specified a real game simulation of VS to provide early field experience, but it did not have the resources to develop and implement the simulation of a VS Site Facilitator's professional practice in K-12 schools. The benefits of simulated practice in complex tasks has been proven in many professions, including flight simulations for pilot training, but an effective application has yet to be built and tested in teacher education. Funding of a project to develop such a simulation is recommended.

3. **Other comments**
   We were sad to loose our project officer Lavona Grow during the third year of our project. She has been a very effective manager for us with a deep understanding of technology in teacher education from her work in the PT3 program. With this excellent foundation we were able to bring the project to a successful conclusion following an extension year that had been planned with Lavona before she left FIPSE.