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MULTIDIMENSIONAL USE OF CONCEPT MAPPING IN A DISTRIBUTED ALTERNATIVE TEACHER CERTIFICATION PROGRAM

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Abstract. In September 2004, the State University of New York (SUNY) Empire State College (ESC) enrolled its first cohort of students in its Master of Arts in Teaching (MAT) program. The three year, 42-credit graduate curriculum prepares teachers for under-served urban New York schools in Buffalo, Rochester, Syracuse, Albany, and the New York City metropolitan area. In fulfilling Empire State College's mission as SUNY's adult learning college, the MAT program is designed to meet the needs of working adults pursuing New York State (NYS) teacher certification at the middle or high school level in subjects where there is the greatest need: mathematics, biology, chemistry, earth science, physics, languages other than English (French and Spanish), English language arts, and social studies. Two key features of the MAT program are its distributed nature and emphasis on online teaching and learning. This poster will include a brief overview of this innovative teacher education program and provide rich examples of how concept maps are used in multidimensional ways to guide program development, facilitate online teaching and learning, assess teacher candidate progress, and guide program evaluation.

1 Introduction

In September 2004, the State University of New York (SUNY) Empire State College (ESC) enrolled its first cohort of students in its Master of Arts in Teaching (MAT) program. The three year, 42-credit graduate curriculum prepares teachers for under-served urban New York schools in Buffalo, Rochester, Syracuse, Albany, and the New York City metropolitan area. In fulfilling Empire State College's mission as SUNY's adult learning college, the MAT program is designed to meet the needs of working adults pursuing NYS teacher certification at the middle or high school level in subjects where there is the greatest need: biology, chemistry, earth science, physics, math, languages other than English (French and Spanish), English language arts, and social studies.

Empire's MAT program seeks to:

1. Increase the number of highly qualified, effective teachers in economically disadvantaged, multi-ethnic urban school communities.
2. Prepare licensed teachers in critical need content areas, particularly science, math, and languages other than English.
3. Provide an alternative teacher preparation pathway for working adults who already have content expertise from prior academic study and work experience.
4. Provide teacher candidates with extensive in-service mentoring while they gain teaching experience, complete their master's degrees, and qualify for the NYS initial teaching certificate.
5. Provide an innovative, technology-centered model for teacher education.

Besides the challenges associated with preparing adult career changers to teach in diverse urban school districts, there are additional challenges because Empire State College and the MAT program are distributed across NY State. With program faculty distributed across seven College centers in the five major metropolitan areas of NY, collaboration and program development require particular attention to means of communication and shared decision-making. With teacher candidates also located throughout the State and just as likely to be in a class with teacher candidates outsider of her/his geographic region, teaching and learning also require attention to means for building collaborative learning communities. One of the most significant means for overcoming these challenges has been the multidimensional use of concept mapping throughout the MAT program. This poster will present the multifaceted ways in which concept mapping has been integrated throughout this distributed alternative teacher education program.

2 Multidimensional Use of Concept Mapping

There are a number of innovative elements of Empire State College's MAT program for which we have integrated the use of concept mapping. In the sections that follow, we briefly touch upon how concept mapping is used in three elements of innovation. Our poster will include a brief overview of this innovative teacher education program and

provide rich examples of how we are using concept maps to guide program development, facilitate online teaching and learning, assess teacher candidate progress, and guide program evaluation. We will conclude with the potential impacts of our model on teacher preparation. Our poster will be designed to stimulate discussion with conference participants.

2.1 Professional Learning Plan and Electronic Portfolio

The Professional Learning Plan (PLP) is a web-based repository for teacher candidate artifacts. Artifacts include things such as exemplary lesson plans, concept maps, personal educational philosophy statement, professional development plans, and reflections. Teacher candidates link their artifacts to MAT program standards and performance criteria and are prompted to reflect upon their submitted work. In lieu of a Master's thesis, teacher candidates select exemplary artifacts in their PLP for publication in a final MAT electronic portfolio. Figure 1 is a concept map that MAT program faculty constructed to help them conceptualize the components of the PLP and the final MAT portfolio. Concept maps such as this one undergo continuous revisions as the MAT program evolves, thus the map becomes a living document that reflects current thinking. They are also used as frameworks for writing program guidelines for teacher candidates.

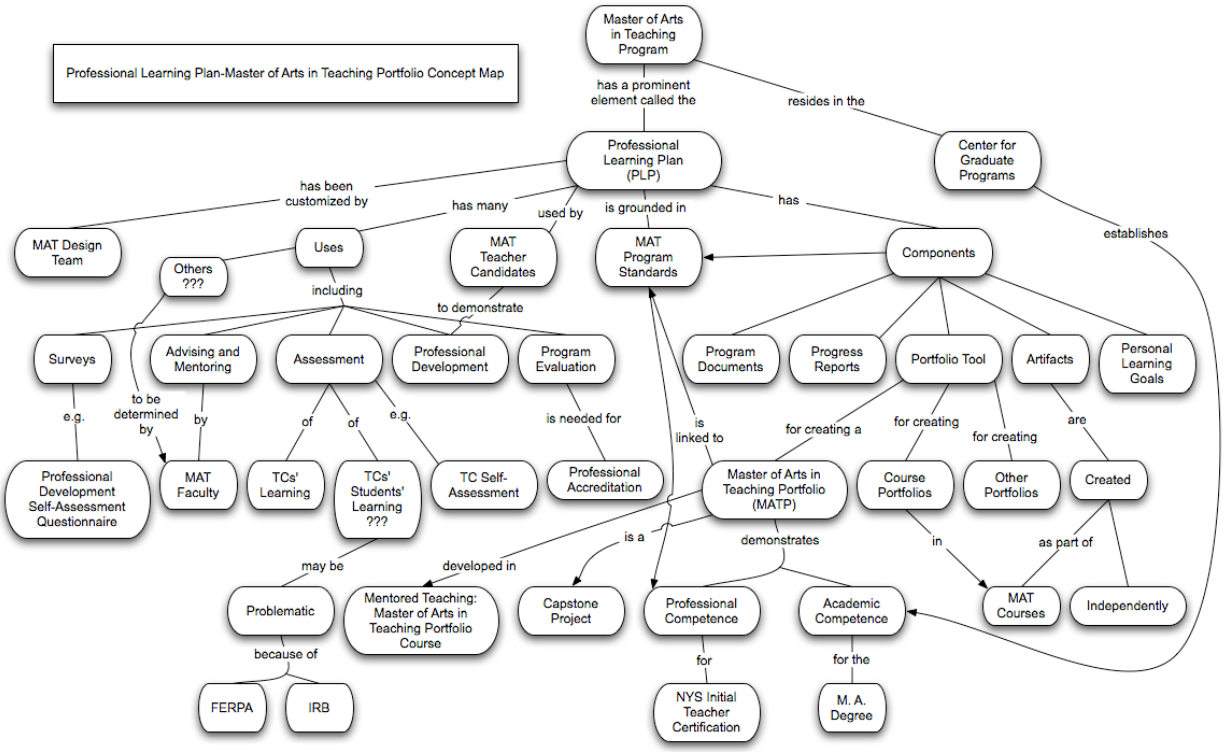

Figure 1. Concept map constructed to guide the use of the MAT's Professional Learning Plan (PLP) in the development of teacher candidates' final teaching portfolio.

2.2 *Course Development*

The MAT program is built upon Empire's model of mentoring adult learners. Teacher candidates are mentored throughout their three years in the program by MAT faculty, school district teacher mentors, and a cohort of peers. In Years 2 and 3, teacher candidates enroll in a Mentored Teaching course each term. Each Mentored Teaching course is coupled to an online course that the teacher candidates take in the same term. Thus in the fall term of Year 2 teacher candidates take Teaching and Curriculum, and Mentored Teaching: Teaching and Curriculum. Figure 2 is a concept map developed by program faculty to guide the development of the mentored teaching courses. The readability of this map will be improved for the poster and final conference poster and paper.

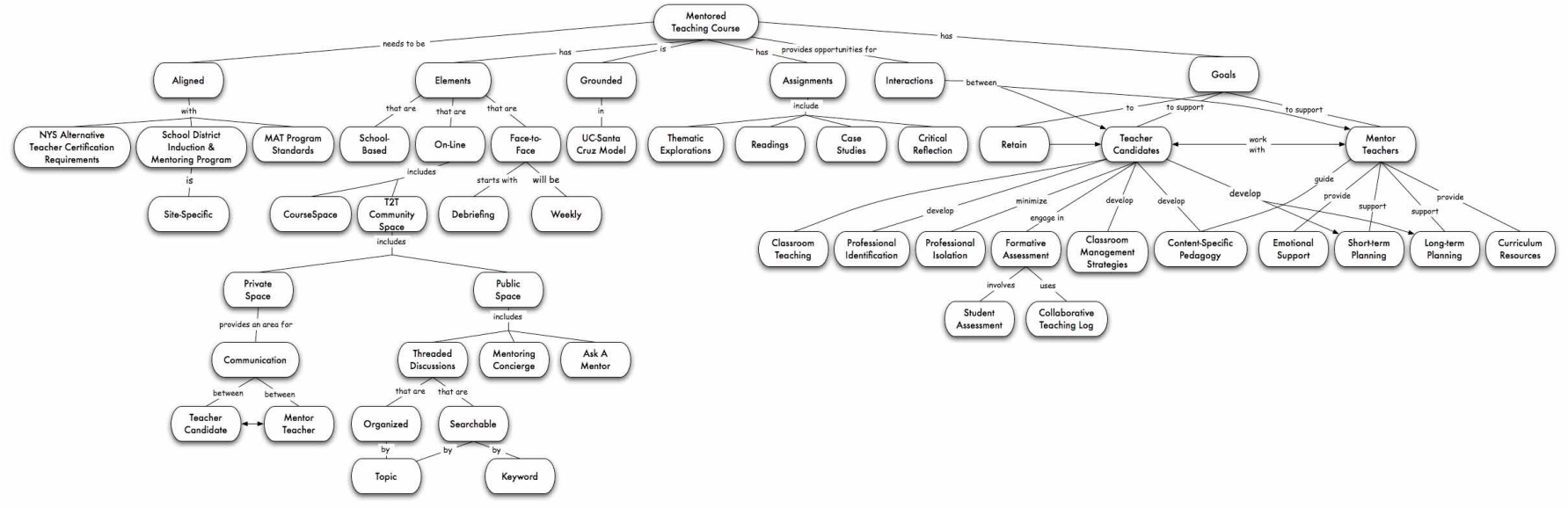

Figure 2. Concept map constructed by program faculty to guide development of a Mentored Teaching course.

2.3 Teacher-Candidate-Constructed Concept Maps in an Online Environment

In any given fall or spring term, teacher candidates enroll in two courses. One course is wholly online and the other is a hybrid that blends online learning with in-class face-to-face meetings. Concept mapping assignments have been integrated into most MAT courses. Concept mapping assignments are used to: clarify teacher candidates' own understanding of content knowledge; create unit and lesson plans; further their understanding of student learning; and assess their own students' learning. The two concept mapping software programs that we use are CmapTools and Inspiration. Figure 3 is a teacher candidate's concept map (this one created in Inspiration) for a lesson on energy. She chose this topic because she felt her own understanding of energy was weak. Note here the inaccurate relationship she made between matter and inertia. Teacher candidates post their concept maps online for faculty and peer critique and feedback.

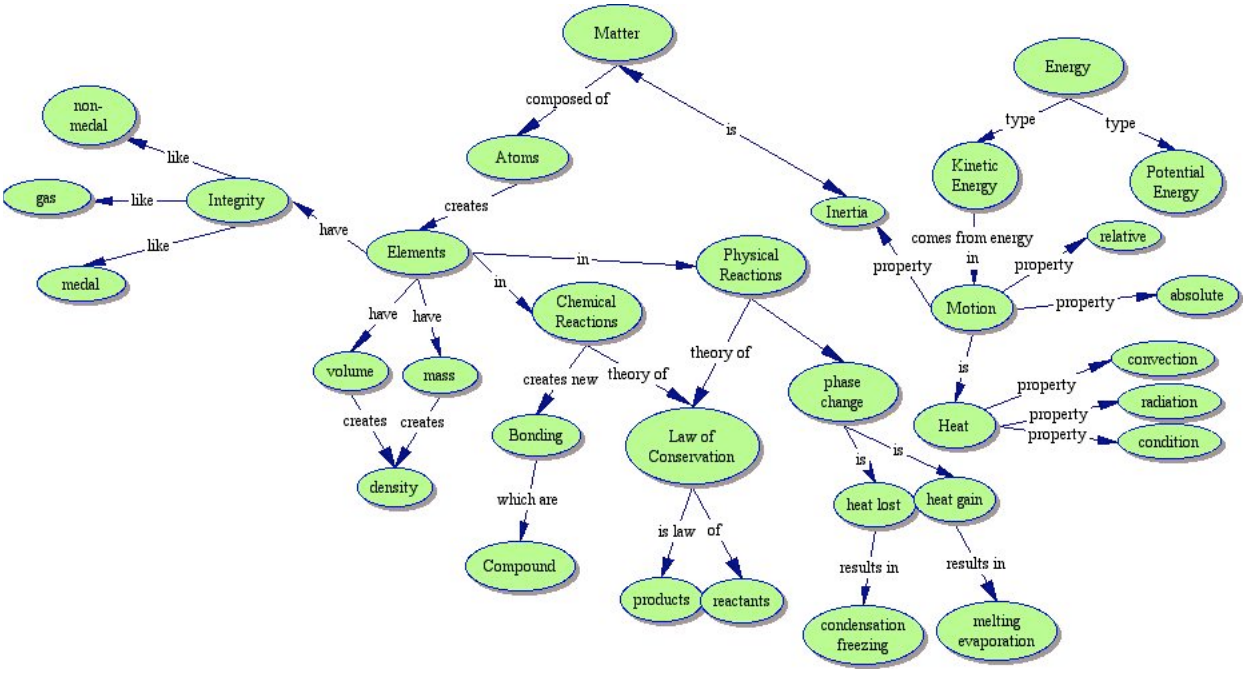

Figure 3. Concept map constructed by a teacher candidate in planning a lesson on energy. Note this teacher's inaccurate relationship between matter and inertia.

3 Summary

The State University of New York Empire State College Master of Arts in Teaching program is designed to prepare adult career changers to teach in high need content areas in high need school districts across New York State. Like Empire State College as a whole, the faculty and teacher candidates in the MAT program are distributed across NY. This provides for a unique set of challenges but also a unique set of opportunities for teacher preparation. Among the challenges are building a team of teacher education faculty working toward shared goals while being dispersed across the state; and creating learning communities of teacher candidates who are also in widely varying geographic locations in NY. Among the opportunities presented is the multidimensional integration of concept mapping throughout an innovative teacher education program. Concept mapping is used to guide program development, facilitate faculty communication, facilitate teacher candidates' learning, assessing teacher candidates' content knowledge, and enhance teacher candidates' professional development. All of this occurs in a collaborative online environment for which concept mapping is particularly well-suited.

References

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Novak, J. D., & Gowin, D. B. (1984). Learning How to Learn. New York: Cambridge University Press.