Institutional Effectiveness Report
2021-2022

Program: Exceptional Learning Ph.D.

College and Department: College of Education - Curriculum and Instruction

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Mission: The central focus of the Exceptional Learning Ph.D. (ELPhD) program is the study of diverse exceptional learner populations. Exceptional learners may be a member of one or more of the following groups: at-risk, vulnerable, underserved, underrepresented, and/or marginalized populations. Exceptional learners include, but are not limited to, those persons for whom social, economic, cultural, and physical characteristics may function as a barrier to learning. These exceptional populations may be neglected, oppressed, or disempowered by society; often excluded from equitable access to governmental, economic, educational, sociocultural, and community resources; and viewed as inherently different from the majority population. The ELPhD program offers an outstanding graduate education that prepares professionals for careers as leaders in their disciplines and to effect positive change in diverse populations through research, leadership, and service.

The ELPhD program has a primary mission of offering rigorous and robust academic preparation of professionals who serve their communities, public school systems, institutions of higher education, and nontraditional educational environments. Core courses prepare students to address issues related to exceptional learners in all disciplines, traditional and nontraditional learning environments, inclusion, equity, and diversity. The research course sequence provides students a thorough grounding in research methods. Core, research, and concentration courses deliver interdisciplinary perspectives, advanced methodological preparation, and fundamental theoretical knowledge—which work together to shape inspired, engaged, and innovative professionals. Specific programs of study are available in four concentrations: Applied Behavior Analysis (ABA), Literacy, Program Planning and Evaluation (PPE), and STEM Education. There are two strands within ABA: *Applied Behavior Analysis School Age and Adult Populations* (ABAS) and *Young Children and Families* (YCF). Instruction and research are major components of the academic mission of the program. A committed faculty serves the students through instruction, scholarly activity, and service to provide quality academic experiences.

These goals and outcomes have been identified through faculty collaboration, and they are consistent with a central purpose of any Ph.D. program: to prepare individuals for scholarly and professional success in their chosen field. The objectives are broad enough to allow for the diversity of the concentrations, yet maintain the focus on exceptional learners. Faculty routinely monitor current practices in core, research, and concentration courses—through attending academic and professional conferences, examining theory, and reviewing evidence-based literature—and assess how they align with program goals and outcomes.

Program Goals:

PG 1: Provide course instruction that models evidence-based practices in the respective program areas.

PG 2: Initiate and maintain scholarly research activities that enhance program development and contribute to the design and delivery of services and supports to exceptional populations through research dissemination in the field.

PG 3: Develop leadership personnel in the areas of teaching and research for service in the fields of public education and social services, such as public schools, state agencies, and higher education.

Student Learning Outcomes:

SLO 1: Content Mastery & Course Competency: Upon successful completion of Exceptional Learning Ph.D. program, the graduate will demonstrate successful attainment of course competencies within the required program of study that results in the learner's mastery of program content.

SLO 2: Professional Skills: Upon successful completion of Exceptional Learning Ph.D. program, the graduate will demonstrate the development of professional skills in the areas of teaching, research, and service.

A departmentally developed curriculum map can be found in Appendix 1 that shows the connections between courses and student learning outcomes.

Assessment Methods:

PG 1: Course Instruction

1. *IDEA evaluations* (administered every semester)**:**

   Course evaluations for each faculty member are implemented and maintained through the IDEA evaluation system, and are used by faculty members to refine instructional practices and modify course content based on student feedback in support of program goals and student learning outcomes.

   The IDEA evaluation survey is nationally normed, standardized instrument. These evaluations allow for national comparisons against similar courses with student ratings of progress on relevant objectives and teacher and course effectiveness. IDEA evaluations are used at higher education institutions all over the US. The evaluations have the support of 45 years of research and include questions to account for variables such as class size, student motivation, and other student and course characteristics.

   Scores are used to gauge curriculum and faculty efficacy with respect to program goals and SLOs. The IDEA evaluation reports incorporate resources to support instruction development and improvement.

   Thresholds of Acceptability – IDEA

   - Acceptability: 3.5 score

- Expectation: 3.6–3.9 score
- Exceptionality: ≥ 4.0 score

PG2 & 3: Scholarly Research AND Leadership Personnel

1. *ELPhD Faculty Scholarly Activity Report* (conducted annually in Spring semester; Program Goals 2 & 3):

   Each faculty member submits a Faculty Activity report to Director of Graduate Programs addressing her or his efforts for the previous academic year. The report will address the following indicators: grant proposals, publications, presentations, other research endeavors, external consultants to public schools and agencies (including in-service and professional development). An overall summary of the program's progress will be included in this IE report as the format of the annual report no longer captures a complete picture of faculty activity. Student involvement is captured in the ELPhD Student Scholarly Activity Report**.**

2. *ELPhD Student Scholarly Activity Report:*

   ELPhD students are asked annually to provide a current record of their scholarly activity (e.g., publication and presentations of original research or theoretical work, grant proposals, professional development activities). These represent peer-to-peer and faculty-student collaborations.

These assessment tools are used to monitor faculty and student attainment of program goals & SLOs. Informal check-ins occur throughout the year as well. Opportunities for collaboration, support, and skill development (e.g., calls for proposals for articles/chapters/conferences, workshops, seminars) in these areas are disseminated to all ELPhD students and faculty. Results are disseminated through faculty meetings, the twice-yearly Data and Assessment Forum, and institutional reports.

An overall summary of the program's progress will be included in this IE report as the format of the annual report no longer captures a complete picture of faculty activity.

Thresholds of Acceptability – Student Scholarly Activity

- Acceptability: actively working on a presentation or publication manuscript; submitted at least one presentation proposal &/or publication; collaboration with ELPhD students and faculty.
- Expectation: submitted two or more presentation proposals &/or publication manuscripts; acceptance continued work on conference proposals and manuscripts for submission; collaboration with ELPhD students, faculty, and staff.
- Exceptionality: submitted multiple presentation proposals &/or publications; at least one acceptance; cross-disciplinary and/or interdepartmental collaboration with students and faculty

SLOs 1 & 2: Content Mastery & Course Competency AND Professional Skills

1. *ELPhD Academic Achievement table:* Students are required to maintain a 3.25 GPA while enrolled in the ELPhD program. A grade of B (80–89 out of 100) or better demonstrates sufficient content mastery for each course, whether that content is methods, practical application of professional skills, theory, or any combination of the three. Failure is considered a C or below. Students are allowed one C (70–79 out of 100) during their time in the ELPhD program. A second C is grounds for academic dismissal from the program. Tables in Appendix 1 below demonstrate course alignment to SLOs & PGs; attainment of an acceptable grade or higher in these courses aligns with progress toward and attainment of SLOs & PGs.

   Thresholds of Acceptability – Academic Achievement

   - Acceptability: 3.25 GPA (mainly *B*s)
   - Expectation: 3.5 GPA (*A*s & *B*s)
   - Exceptionality: ≥ 3.9 GPA (almost all *A*s or all *A*s)

2. *Research Course Sequence*: The research course sequence is an integral part of the ELPhD program. *Theoretical Foundations of Research* (EDU 7010), *Qualitative Inquiry in Education* (EDU 7330), *Data Analysis and Representation in Qualitative Inquiry* (EDU 7340) make up the qualitative series. *Quantitative Inquiry in Education I* (EDU 7420), *Quantitative Inquiry in Education II* (EDU 7430), and *Research Design* (EDU 7300) comprise the quantitative series. Each 3-course series includes foundational theoretical concepts, methods of data collection and data analysis, creation of a research proposal, and an original study.

   The research courses build upon one another and are sequential in order, further facilitating theoretical understanding and methodological application. For example, statistical concepts learned in EDU 7420 form the base knowledge for assignments in EDU 7430. Assignments in EDU 7430 are deliberately designed to be further developed in EDU 7300, the culminating quantitative research course. Similarly, theoretical foundations are used to inform a research proposal in EDU 7010 that is then used to enact data collection (EDU 7330), analysis, and interpretation (EDU 7340). This succession allows students to develop the necessary research skills and emerge from the courses with original work that addresses gaps in the literature, investigates theory, uses sound and appropriate methodologies, and contributes knowledge to the discipline.

   Students are

   1) required to read extensively, including scholarly writings related to epistemologies and theories that influence and inform social science research, and exemplary studies;
   2) expected to submit polished, scholarly papers that undergo intense review, with the expectation of publishing and presenting; and
   3) undergo faculty and peer review during class presentations of work in preparation for presenting at discipline-specific conferences and other scholarly forums.

Additional concentration research classes are also required: *Single Subject Design* (EDU 7320); *Topics, Issues, & Research in Early Childhood Special Education* (ABAP 7920), *Advanced Regression Analysis* (EDU 7530); *Theory, Methodology, and Trends in Literacy Research* (EDUL 7700); and *STEM Education Research* (EDUS 7530). The research course sequence and concentration-specific research courses prepare students for carrying out high-quality research, recognizing and utilizing credible research, and teaching research methods courses.

Course instructors work closely with students to ensure their success. If an instructor becomes aware that a student is not prepared to move onto the next course in the sequence, they are connected with peer tutors, additional study materials, and/or other resources to ensure success in the course and preparedness for the next level or, if more appropriate, encouraged to withdraw and re-take the class at a later date.

Starting in Fall 2018, ELPhD faculty and the Director of Graduate Programs have recently implemented a noncompletion identification and intervention procedure to improve student success and identify risk factors to better support students throughout their academic journey in the program. Faculty alert the Director when students are in danger of earning a C, display a marked change in classroom behavior (e.g., a shift from engaged and outspoken to withdrawn), failure to submit multiple assignments, consistent underperformance, and/or knowledge of major life changes that could undermine or threaten academic success. The Director then schedules an interview with each student whom faculty have identified as at-risk for noncompletion. After the interview, the student, faculty, and Director decide on a course of action that best accommodates the student's needs and provides supports and process to assist (e.g., tutoring, weekly meetings with faculty members, peer mentors).

Thresholds of Acceptability – Research Courses

- Acceptability: successful completion of all research courses with a grade of B or better (research course GPA minimum: 3.0); submission of an original research project (via presentation or manuscript) to a regional, national, or international scholarly conference or publication.

- Expectation: successful completion of all research courses with a grade of B or better, with at least two As (research course GPA minimum: 3.3); acceptance of an original research project (via presentation or manuscript) to a regional, national, or international scholarly conference or publication.

- Exceptionality: successful completion of all research courses with mainly As (research course GPA minimum: 3.6); submission of original research projects (via presentation or manuscript) to two or more national or international scholarly conference or publication; acceptance to one or more national and/or international scholarly conferences or publications; collaboration on current research projects with ELPhD and/or other Tech faculty, staff, and/or students.

Please note: *in the research courses, there are no attendance grades or other non-coursework related scores. Scores are based solely on final exams, research projects, project proposals, all of which require mastery of appropriate research content/theoretical knowledge and skills. Course grades solely reflect students' progress in research content knowledge and skill mastery.*

3. *Grant proposals* for submission to an external funding agency are crafted each Summer semester in *Program Planning and Proposal Development* (EDU 7040) (SLOs 1 & 2).

   Program Planning and Proposal Development (EDU 7040) incorporates theoretical program planning perspectives; in-depth discussion of various program planning models; and effective program development, planning, and evaluation practices for a variety of educational settings. This class includes a focus on adult learners as exceptional learners, in and out of traditional educational environments, and their particular needs. These theories, skills, and practices are not typically addressed in undergraduate or graduate programs and are especially important in preparing professionals who can lead sustainable change for exceptional learners. This course requires students to prepare products that may have real-world impact.

   One of two main project students undertake in EDU 7040 is creation of a grant proposal for a state- or federally-funded program. After completing the proposal, students must defend their proposal in mock "board meeting" discussions, which prepares them for gaining stakeholder buy-in, identifying unintended outcomes, and assessing needs in professional environments. This also provides students a chance to further improve their proposal via incorporation of the feedback given. The course instructor, who has authored or co-authored multiple successful grants over the last decade, evaluates the grant proposals and provides further input. Students who choose to submit proposals to the funding agency are encouraged to do so and directed to the Office of Research for instruction in grant submission policy and procedures.

   Grades are monitored and in-class and informal feedback about the grant proposal process and collaboration (development of professional skills) is used to ensure progress toward SLOs and PGs and to improve student success.

   Thresholds of Acceptability – Grant Proposals

   - Acceptability: successful completion of a grant proposal as part of *Program Planning and Proposal Development* (EDU 7040) with a grade of B or better.
   - Expectation: successful completion of a grant proposal as part of *Program Planning and Proposal Development* (EDU 7040) with a grade of B+ or better.
   - Exceptionality: successful completion of a grant proposal as part of *Program Planning and Proposal Development* (EDU 7040) with a grade of B+ or better; grant proposal submission; collaboration with other Tech faculty and students on additional grant proposals.

Please note: *in the research courses, there are no attendance grades or other non-coursework related scores. Scores are based solely on final exams, research projects, project proposals, all of which require mastery of appropriate research content/theoretical knowledge and skills. Course grades solely reflect students' progress in research content knowledge and skill mastery.*

4. *Comprehensive examinations* are administered near the end of each semester as needed, typically in conjunction with *Research Seminar in Education* (EDU 7920), after all other coursework has been completed (SLOs 1 & 2). Rigorous comprehensive examinations provide an opportunity for ELPhD students to provide evidence of proficiency in and mastery of expected learning outcomes (SLOs 1 & 2). Students illustrate mastery of theory, research proficiency, professional skills, and concentration-specific content through their comprehensive exam responses. Students must pass their comprehensive exams in order to move on to Ph.D. candidacy and continue in the program.

   At the beginning of *Research Seminar in Education* (EDU 7920), the student and his/her Chair will select a series of four consecutive days during which the comprehensive examination will take place. Each committee member submits an exam question or set of questions to the Chair. The student typically has 24 hours in which to craft a response to each member's question/set of questions. Committee members may elect to allow the use of resources or to prohibit them. Responses are written to one committee member's question at a time. A student should not work on multiple responses at once. The questions must be answered with appropriate detail, clarity, and insight, and display strong comprehension and integration of fundamental concepts.

   Once complete, the student submits the response to the Chair. If the question being answer was the Chair's, the Chair will then grade the response. If the question was submitted by a committee member, the Chair shares the response with the appropriate member. Responses on the qualifying exam are scored by their program chair and members of their graduate committee.

   Scores (pass, low pass, fail) are based on pre-determined performance criteria devised by their committee and informed by evidence-based practices, discipline content knowledge, and professional skills introduced and reinforced in previous coursework taken by the student. Upon passing the comprehensive exam, students move into Ph.D. candidacy.

   If an answer lacks the desired mastery, committee members have two options. If the response is reasonably close to the expected level of proficiency and fluency, the committee member may choose to ask for more detail and offer a student an opportunity to elaborate if necessary. Alternatively, the committee member may fail the student. Students who fail the comprehensive exam must wait a semester before retaking their exam. Students may only retake their comprehensive exam one time. A failure of any part of a student's retake examination warrants academic dismissal from the program.

   Student pass rates are monitored every semester. Any signs of declining competence and response quality are reviewed as a means of maintaining and/or improving curricular efficacy as well as ensuring student success.

Thresholds of Acceptability – Comprehensive Exams

- Acceptability: students pass the comprehensive exam in no more than two attempts.
- Expectation: students pass the comprehensive exam on the first attempt with no more than one Low Pass score.
- Exceptionality: students pass the comprehensive exam on the first attempt (receive Passes on all sections).

5. *Dissertation prospectus* is presented and defended each semester as needed, in conjunction with or immediately following *Research Seminar in Education*, EDU 7920 (SLOs 1 & 2: successful written and oral prospectus defense to graduate advisory committee). Note: *Ph.D. candidate is used in place of student as the individual will typically have passed comprehensive exams before presenting the prospectus.*

   Ph.D. candidates prepare their dissertation prospectus in *Research Seminar in Education* (EDU 7920). In this course, the Ph.D. candidate crafts the research design and write the prospectus for the proposed study. After receiving iterative feedback on the first three chapters of their research proposal from the course instructor and making revisions, the Ph.D. candidate presents a practice prospectus defense. The course instructor and candidate's Chair attend, though all committee members are welcome. Input from the course instructor and Chair is given at the end of the practice defense. The Ph.D. candidate then incorporates the feedback into the prospectus presentation and the dissertation prospectus.

   After the practice prospectus defense, the Ph.D. candidate is directed to either schedule a formal prospectus defense with his/her dissertation advisory committee (after successful defense) or is directed to continue working on the prospectus and presentation with guidance from the Chair and committee members.

   Once a formal prospectus presentation and defense date has been selected, the Ph.D. candidate is required to submit the dissertation prospectus to committee members at least two weeks prior to the scheduled prospectus date, though earlier is encouraged when possible.

   At formal prospectus defense, the Ph.D. candidate presents the prospectus using PowerPoint, Prezi, or Keynote (other mediums may be acceptable) and provides handouts for the committee. The presentation is 20–30 minutes long. The Ph.D. candidate covers study background and context, problem description, study purpose, significance, theoretical lens, connections to relevant literature, and a detailed description of the proposed research methodology. Other pertinent information may also be included. After the presentation has concluded, committee members pose questions that the candidate must answer. The Ph.D. candidate is then dismissed from the room, while the committee members deliberate on whether or not the candidate should pursue the proposed research. Once a decision has been reached, the Ph.D. candidate is brought back and the decision is shared. The committee also provides additional feedback on the prospectus. If the prospectus defense was not successful, the committee will ask the Ph.D. candidate to revise the proposal and

convene at a later date to present the revised prospectus. Ph.D. candidates who successfully defend the dissertation prospectus are given permission to proceed with their dissertation work.

Dissertation prospectus defense pass rates are regularly monitored. Historical data suggest students are well-prepared and indicate the ELPhD program is meeting PGs & SLOs, however, should a decrease in preparedness and pass rate occur, it will be recognized quickly and corrective action can be taken.

Thresholds of Acceptability – Dissertation Prospectus Defense

- Acceptability: Ph.D. candidate passes the dissertation prospectus defense in no more than two attempts; Ph.D. candidate answers defense questions, but answers may lack some of the desired complexity/depth; prospectus addresses all the required elements (study context, problem description, study purpose, significance, theoretical lens, connections to relevant literature, and research methodology), but may need additional information; major revisions may be required.

- Expectation: Ph.D. candidate passes the dissertation prospectus defense on the first attempt; Ph.D. candidate adequately answers defense questions; prospectus is thorough and well-crafted, addressing all required elements in sufficient detail; revisions to the prospectus are required. After revisions, Ph.D. candidate will be ready to enter dissertation work.

- Exceptionality: Ph.D. candidate passes the dissertation prospectus defense on the first attempt; Ph.D. candidate's answers to defense questions are exceptional and demonstrate deep understanding of the problem to be addressed and its relevance; prospectus displays thoughtful organization, relevant study purpose, clear significance, excellent methodology, and sophisticated insight; minimal revisions are required; Ph.D. candidate is clearly ready to enter dissertation work.

6. *Dissertation defense* (Presented each semester as needed). The dissertation defense occurs each semester as needed. Graduates must successfully complete a written and oral dissertation defense, scored by their dissertation advisory committee (minimum four qualified members) (SLOs 1 & 2).

   Building upon the prospectus work, the Ph.D. candidate works closely with committee members throughout the dissertation process in preparation for the dissertation defense. A Ph.D. candidate regularly submits dissertation chapters to each committee member for feedback (schedule determined by Ph.D. candidate and committee Chair). The Ph.D. candidate incorporates feedback from all members and continually seeks additional guidance on revisions and refinement. The full dissertation must be submitted to the dissertation advisory committee and Director of Graduate Programs at least two weeks prior to the scheduled defense date, though earlier is encouraged when possible.

   During the dissertation defense, the Ph.D. candidate has 20–40 minutes to review the information covered in the prospectus proposal (e.g., context, problem addressed, significance, methodology) and present the original dissertation research findings,

conclusions, and implications (defense time is determined by the Chair). The defense includes written materials and a formal presentation. After the presentation has concluded, the committee and any others present may pose questions to the Ph.D. candidate. Once all questions have been answered satisfactorily, the Ph.D. candidate and any guests are dismissed from the room. The dissertation advisory committee then deliberates about whether the Ph.D. candidate's defense was successful. Once a decision has been reached, the Ph.D. candidate is brought back and the decision is shared.

If the dissertation defense was successful, the committee signs the *Dissertation Defense* form and submits it to the Director of Graduate Programs and Graduate Studies. If the defense was not successful, the committee also provides additional feedback and outlines revisions that need to be made before scheduling a second defense.

The dissertation defense serves as the final assessment of a Ph.D. candidate's content mastery, course competency, and professional skill development as well as their development as scholars and leaders. Students' must have mastered and integrated the content and skills acquired throughout the ELPhD program in order to pass the dissertation defense. Historical data show that students are well-prepared and generally pass on the first attempt. This pass rate (graduation rate) is monitored every semester.

Thresholds of Acceptability – Dissertation Defense

- Acceptability: Ph.D. candidate passes the dissertation defense in no more than two attempts; candidate answers to defense questions, but answers may lack some of the desired complexity/depth; dissertation and defense presentation address all the required elements (study context, problem description, study purpose, significance, theoretical lens, connections to relevant literature, research methodology, findings, conclusions, and implications), but may need additional information; major revisions may be required before submitting to Graduate Studies and ProQuest.

- Expectation: Ph.D. candidate passes the dissertation defense on the first attempt; Ph.D. candidate adequately answers defense questions; dissertation is thorough and well-crafted, addressing all required elements in sufficient detail; minor revisions required before submitting to Graduate Studies and ProQuest.

- Exceptionality: Ph.D. candidate passes the dissertation defense on the first attempt; candidate's answers to defense questions are exceptional and demonstrate deep understanding of and connection to the work; defense presentation is engaging, informative, and shows Ph.D. candidate's expertise as a scholar and appropriate professional skills; dissertation displays thoughtful organization, relevant study purpose, clear significance, excellent methodology, clear findings, and insightful, nuanced conclusions and implications; minimal, if any, revisions are required before submitting to Graduate Studies and ProQuest.

Results:

Program Goal 1: Course Instruction

IDEA evaluations allow for comparison against similar courses on a national level. Scores indicate faculty and curricula are successful in achieving learning outcomes and objectives. Summer 2021 average score was 4.7, fall 2021 average was 4.5 on a 5-point scale, and spring 2022 average was 4.6. The academic year average was 4.6. This exceeds the *Threshold of Acceptability* (3.5); ELPhD students report that faculty performing at the *Threshold of Exceptionality* (≥4).

Exceptional Learning Ph.D. Course IDEA Evaluations 2021–2022

Faculty	*Overall Ratings*								*Summary Evaluation*	
	B. Progress on Relevant Objectives		*D. Excellent Teacher*		*E. Excellent Course*		*C. Average of D & E*		*A. Average of B & C*	
	Raw	*Adj*	*Raw*	*Adj*	*Raw*	*Adj*	*Raw*	*Adj*	*Raw*	*Adj*
Summer 2021	4.5	4.5	4.9	4.9	4.7	4.8	4.8	4.8	4.6	4.7
Fall 2021	4.1	4.1	4.6	4.7	4.6	4.6	4.6	4.6	4.4	4.4
Spring 2022	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6

Program Goals 2 & 3: Scholarly Research AND Leadership Personnel

The tables below show a high degree of faculty activity for each indicator and respective guided student involvement, a dip, however, was noted for this academic year. This may be due in part to a) continued increased time devoted to restructuring and revising class delivery, pacing, and content; b) changes in travel and conference structure and availability due to the COVID–19 pandemic; and c) fewer responses from faculty confirming their activities.

During the 2021–2022 academic year, ELPhD students belonged to over 45 professional organizations and disseminated original work (either their own or part of an active research collaboration with faculty &/or peers) at 22 scholarly/professional conferences (10 regional presentations, 6 national presentations, 6 international presentations) (see Table 5). The COVID–19 pandemic has continued to affect presentations to some extent (e.g., travel restrictions, funding, changes to delivery modes, cancellations and postponements). With two large cohorts admitted the last two academic years, many of the students have not yet finished their research sequence and so do not yet have original work to present. There is also a larger number of working adults with additional job demands in response to the pandemic, which may also affect capacity to participate in and present projects. It also correlated with a

slight drop in faculty scholarly activity. Despite this, overall, students consistently performed or above the *Threshold of Expectation*, with several attaining the *Threshold of Exceptionality*. This trend will be monitored, and additional support addressed in the *Modifications & Continuous Improvements.*

Students enrolled in the ELPhD program during the 2021–2022 academic year submitted 22 manuscripts (article, book chapter, or other scholarly work), seven of which have been published (see Table 5). Students consistently performed or above the *Threshold of Expectation*, with several attaining the *Threshold of Exceptionality*.

Note: *in Tables 4 and 5, publications and presentations in which multiple faculty or students took part are only counted once. For example, four students may have published a paper together; it is reported as one publication rather than four.*

Table 4. Exceptional Learning Ph.D. Faculty Scholarly Activity

	Exceptional Learning Ph.D. Faculty Activity						
	In-Service Workshops	Grant Proposals Funded	National Presentations	International Presentations	Books	Book Chapters	Peer-Reviewed Publications
2017–2018	5	30	37	5	10	2	42
2018–2019	8	20	29	10	1	3	34
2019–2020	21	16	28	15	2	6	57
2020–2021	11	21	20	18	3	16	30
2021–2022	0	11	7	5	0	1	10

Table 5. Exceptional Learning Ph.D. Student Scholarly Activity

Exceptional Learning Ph.D. Student Scholarly Activity								
	In-Service Workshops	Grant Proposals Crafted	Regional Presentations	National Presentations	International Presentations	Book Chapters	Peer-Reviewed Publications	Pending Peer-Reviewed Publications
2017 – 2018	2	15 *(7 funded)*	19	12	10	0	5	8
2018 – 2019	0	5 *(1 funded)*	24	12	16	0	3	4
2019 – 2020	1	14 *(7 funded)*	18	11	10	2	7	5
2020 – 2021	1	17 (7 *funded*)	15	5	10	0	7	7
2021 – 2022	2	12 (*4 funded*)	10	6	6	1	11	9

Student Learning Outcomes 1 & 2: Content Mastery & Course Competency AND Professional Skills

Grant proposals for an externally funding source are a required component of EDU 7040. Students are also encouraged to take part in grants with faculty and community members. Table 5 shows the number of proposals written. In 2021–2022, 12 grant proposals (including collaborative grants written outside of EDU 7040) were crafted and submitted proposals; 4 of these were funded. Students consistently performed or above the *Threshold of Expectation*, with several attaining the *Threshold of Exceptionality*.

Students are well prepared for their comprehensive examinations. All students in the last academic year passed their comprehensive examination on the first attempt and entered Ph.D. candidacy successfully. None received a low pass. Students are performing at or above the *Threshold of Expectation*. Historical comprehensive examination data show successful responses on the first attempt for students taking exams in the past 5 years, while only 3 have required a retake since 2009 (see Table 6 below).

All Ph.D. candidates in the 2021–2022 academic year successfully passed their dissertation defense on the first attempt, performing at or above the *Threshold of Expectation*. Historical dissertation defense data show successful completion of defense on the first attempt for all ELPhD candidates (see Table 6 below).

All Ph.D. candidates in the last academic year passed their dissertation prospectus defense on the first attempt. All students in 2021–2022 performed at or above the *Threshold of Expectation*. Dissertation prospectus data show successful completion of presentations on the first attempt for all ELPhD students (see Table 6 below).

The majority of students (≥90%) maintain an *A* (3.5 or higher GPA equivalent) throughout the duration of the program. In 2021–2022, ELPhD students maintained an *A* average in the key courses listed in the table above (overall score across all courses: 3.78 out of 4.0). This is consistent with performance of the previous five years. At the PhD-level, course scores ***do not*** include attendance or other scores that are not a reflection of progress on appropriate learning outcomes, content knowledge, and skill mastery. Students are performing at or above the *Threshold of Expectation* (see Table 6 below).

Quantitative research course sequence data—EDU 7420, EDU 7430, EDU 7300—(SLOs 1 & 2) demonstrate students' acquisition and mastery of knowledge of quantitative methods, instruments, analysis, and research design. Results across courses show consistency with each respective student. The higher number of scores in the 80–89 score/ 3.0 GPA range in EDU 7430 is expected considering the degree of difficulty with cumulative knowledge and application of research analysis skills. During the 2021–2022 academic year, the majority of students maintained scores ≥ 90 out of 100 / 4.0 GPA. A greater number of scores ranging from 80–89/3.0 GPA were seen in EDU 7420, but performance demonstrating content mastery remained consistent. No student earned ≤79/2.0 GPA (see Table 6 below). Overall, students are performing at or above the *Threshold of Expectation* (see Table 6 below).

Qualitative research course sequence data—EDU 7010, EDU 7330, EDU 7340— (SLOs 1 & 2) demonstrate students' acquisition and mastery of knowledge of qualitative theory, study design, methods, and analysis (see Table 5). Results across courses show consistency with each respective student and the increased degree of rigor in EDU 7010 and EDU 7430 in comparison to EDU 7330 (where data collection occurs and emphasis is on practical application of research skills). The majority of students (94%) maintained scores ≥ 90 out of 100 / 4.0 GPA (three students this academic year earned a score ranging from 80–89/3.0 GPA in one of the three courses) and no student earned ≤79/2.0 GPA. (see Table 6 below). The average score for students beginning the qualitative series in spring 2022 was 4.0/4.0. Overall, students are performing at or above the *Threshold of Expectation* (see Table 6 below).

Table 6. Exceptional Learning Ph.D. Student Academic Achievement (5-year)

Exceptional Learning Ph.D. Academic Achievement										
	EDU 7010	*EDU 7330*	*EDU 7340*	*EDU 7420*	*EDU 7430*	*EDU 7300*	*EDU 7040*	*Comps*	*Prospectus*	*Defense*
2017–2018	3.8	4.0	3.7	3.9	3.8	3.9	4.0	8/8 passed on 1st attempt	8/8 passed on 1st attempt	7/7 passed on 1st attempt
2018–2019	4.0	4.0	4.0	3.8	4.0	3.8	4.0	5/5 passed on 1st attempt	5/5 passed on 1st attempt	3/3 passed on 1st attempt
2019–2020	4.0	4.0	3.7	3.5	3.3	3.8	3.7	4/4 passed on 1st attempt	4/4 passed on 1st attempt	3/3 passed on 1st attempt
2020–2021	3.8	4.0	3.7	3.8	3.8	3.8	4.0	–	–	–
2021–2022	4.0	–	–	3.7	3.8	4.0	–	–	–	–

Modifications for Improvement:

Appendices

1. Curriculum Map - ELPhD Core & Research Course Alignments
2. Faculty & Student Scholarly and Professional Activity 2020–2021

Appendix 1: Curriculum Map - ELPhD Core & Research Course Alignments

I = introduced R = reinforced M = mastery A = assessment

Core Course Alignment with Program Goals and Student Learning Outcomes

Course	*Title*	*Content Mastery (SLO 1)*	*Scholarly Research Activities (PG 2)*	*Professional Skill Development (PG 3, SLO 2)*	*Evidence-based Practices (PG1)*
EDU 7000	Trans-Concentration Seminar	I	I	I	I
EDU 7010	Theoretical Foundations of Research	I	I, A	I	R
EDU 7020	At-Risk Populations: Research, Service, & Delivery	R, A	R	R, A	R, A
EDU 7040	Program Planning and Proposal Development	I, R	I, R, A	R, M, A	R
CUED 7430	Specialized Applications of Technology to Education	I	I	R, A	R

Research Course Alignment with Program Goals and Student Learning Outcomes

Course	*Title*	*Content Mastery (SLO 1)*	*Scholarly Research Activities (PG 2)*	*Professional Skill Development (PG 3, SLO 2)*	*Evidence-based Practices (PG1)*
EDU 7010	Theoretical Foundations of Research	I	I, A	I	R
EDU 7330	Qualitative Inquiry in Education	R	R	R	R
EDU 7340	Data Analysis and Representation in Qualitative Inquiry	R, M, A	M, A	M, A	M, A
EDU 7420	Quantitative Inquiry in Education I	I	I	I	I
EDU 7430	Quantitative Inquiry in Education II	R, M	R, M	R	R
EDU 7300	Research Design	M, A	M, A	M, A	M, A
EDU 7320	Single Subject Design	I, R	R, M, A	R, M, A	R, M
EDU 7350	Advanced Regression Analysis	R, M	R, M, A	R, M	R, M
EDUL 7700	Theory, Methodology, & Trends in Literacy Research	R, M	M, A	M	M
EDUS 7350	STEM Education Research	R, M	M, A	M, A	M
ABAP 7920	Topics, Issues, & Research in Early Childhood Special Education	I, R	R, M	M, A	R

Appendix 2: Faculty & Student Scholarly and Professional Activity 2020–2021

Faculty Publications

Chitiyo, G., Zagumny, L., Littrell, M. N., **Akenson, A. B.**, Besnoy, K., Davis, K. M., & Mathende, A. M. (2021). Perceptions and experiences of using chess as a heuristic pedagogical method. *International Journal Curriculum & Instruction*, *13*(2). (*in press*)

Silber-Furman, D., Akenson, A. B., & Arce-Trigatti, A. L. (2021). Poetry as power: Critical explorations into the lived experiences of English language students. In T. A. Folwer (Ed.), *Countering the mythology of wellness and inclusion in schooling*. New York, NY: Dio Press. (*in press*)

Akenson, A. B., Arce-Trigatti, A. L., & Akenson, J. E. (2021). Waking up: The transformative artistry of wide open knowledge environments (WOKE) in higher education. In H. King (Ed.), *Exploring expertise in teaching in higher education.* London, UK: SEDA–Routledge. (*in press*)

Arce–Trigatti, A. L., Akenson, A. B., Akenson, J. E. (2020). Threads & roots: Mapping the complexities and ambiguities of transformative, civic, and leadership learning theories. *Journal of Transformative Education*, special issue "*Civic Education as Transformative Education*." (*in press)*

Green, C., Eady, M. J., McCarthy, M., **Akenson, A. B.**, Supple, B., McKeon, J., & Cronin, J. (2020). Beyond the conference: Singing our SSONG. *Teaching Learning and Inquiry*, *8*(1), 42–60. doi:10.20343/teachlearninqu.8.1.4

Arce–Trigatti, A. L., & Akenson, J. E. (2021). The historical blindspot: Guidelines for creating educational leadership culture as old wine in recycled, upscale, and expanded bottles. *Educational Studies,* doi: 10.1080/00131946.2021.1919673

Arce-Trigatti, A. L., & Anderson, A., (2020). Leveraging mindful abstraction as a tool for liberation: Pedagogical observations from an international education course that teach pre-service teachers to transgress global knowledge boundaries. *Journal of Research in Childhood Education. doi: 10.1080/02568543.2020.1856983*

Jorgensen, S., Sanders, J. R., Arce, P. E., & **Arce-Trigatti, A. L.** (2020). An innovative-driven approach to virtual learning: Using the foundry model to transition online. *Science Education & Civic Engagement Journal*.

Arce-Trigatti, A. L. (2020). Fostering emotional engineers: Revisiting constructive thinking in engineering. *Multicultural Journal of Education, 5*(1), 1-19.

Sanders, J. R., **Arce-Trigatti, A. L.**, & Arce, P. E. (2020). Promoting student problem-identification skills via a Jeopardy-Inspired Game within the Renaissance Foundry. *Journal of the European Federation of Chemical Engineering, 30*, 49–59.

Kelley, J., **Arce-Trigatti, A. L.,** & Garner, B. (2021). Marching to a Different Beat: Reflections from a Community of Practice on Diversity and Equity. *Transformative Dialogues: Teaching and Learning Journal.*

Anderson, A., & **Arce-Trigatti, A. L.** (2021). Creating & Commodifying the Neoliberal

Self: A Weberian Analysis of an International Education Course. In J. Brewers and C. Myers, *The Commodification of American Education: Persistent Threats and Paths Forward.* Myers Publishing.

Kelley, J., **Arce-Trigatti, A. L.,** & Haynes, A. (2021). Beyond the Individual: Deploying the Sociological Imagination to Teach Social Problems in the Neoliberal University. In C. Matias, *The Handbook of Critical Theoretical Research Methods in Education* (pp. 284-302). Taylor Francis.

Sanders, J. R., Jorgensen, S., **Arce-Trigatti, A. L.,** & Arce, P. E. (2021). A parallel thinking problem solving pedagogy towards development of t-shaped engineers. *Proceedings from the American Society for Engineering Education Southeastern Conference.* March 8-10, 2021. James Madison University, Virginia.

Adams, B., Jorgensen, S., **Arce-Trigatti, A. L.,** & Arce, P. (2020). Innovative curriculum design for enhancing learning in engineering education: The strategies, principles and challenges of an inquiry-guided laboratory. *Proceedings from the 14th annual International Technology, Education and Development (INTED) Conference.* Valencia, Spain. March 2-4, 2020. Valencia, Spain.

Anthony, H. G., & Robinson, S. J. (2021, June). *Increasing the STEM teaching pipeline*. Published in the proceedings of the tenth annual (2021) Science, Technology, Engineering, Arts, Math, and Education (STEM/STEAM) International Conference, Honolulu, HI.

Greathouse, P., & **Anthony, H. G.** (Eds.). (2021). *Developing mathematical literacy through young adolescent literature*. Lanham, MD: Rowman and Littlefield.

Anthony, H. G., & Moore, K. (2021). My favourite no: How to critique the reasoning of others. In S. Rowland & L. Kuchel (Eds.), *Science + SciComm + Work: Effective Communication in Science Programs. A Practical Guide for Students and Teachers*. (Working; Chapter P58). Springer Nature. (in press)

Anthony, H. G., & Moore, K. (2021). See it, speak it, draw it and learn to communicate in simple language. In S. Rowland & L. Kuchel (Eds.), *Science + SciComm + Work: Effective Communication in Science Programs. A Practical Guide for Students and Teachers*. (Listening; Chapter P23). Springer Nature.

Moore, K., & **Anthony, H. G.** (2021). Using a KLEWS chart to collect and organize information during investigations. In S. Rowland & L. Kuchel (Eds.), *Science + SciComm + Work: Effective Communication in Science Programs. A Practical Guide for Students and Teachers*. (Investigating; Chapter P26). Springer Nature. (in press)

Moore, K., & **Anthony, H. G.** (2021). Using sentence frames and question cards to scaffold verbal discourse: Scaffolded practice for engaging in discourse and argumentation in science. In S. Rowland & L. Kuchel (Eds.), *Science + SciComm + Work: Effective Communication in Science Programs. A Practical Guide for Students and Teachers*. (Speaking; Chapter P18). Springer Nature. (in press)

Anthony, H. G. (2020). [Review of the book *In Search of Deeper Learning: The Quest to Remake the American High School* by J. Mehta & S. Fine]. *Teachers College Record*.

Ronfeldt, M., Bardelli, E., Mullman, H., Truwit, M., Schaaf, K., & **Baker, J. C.** (2020). Improving preservice teachers' feelings of preparedness to teach through recruitment of instructionally effective and experienced cooperating teachers: A randomized experiment. *Educational Evaluation and Policy Analysis*. doi: 10.3102/0162373720954183

Baker, J. E. (2020). *Preparing to teach primary grades* [e-Book]. Great River Learning Publishing.

Davis, A.B., Hales, A.D., **Baker, J.E., & Meadows, J.R.** (2020). Money maker$pace: Fostering financial awareness and student engagement through community outreach. *Tennessee CPA Journal*, (September/October).

Meadows, J.R., Baker, J. E., & Wendt, S. (2020). Fab Fridays: Fostering elementary teacher candidate preparation through informal STEM events. *Journal of STEM Teacher Education*, 54(1), 24–36.

Bounds, P., Cramer, J., & Tamasi, S. (2021). *Linguistic Planets of Belief: Mapping Linguistic Attitudes in the American South.* Routledge.

Beach, J., Mathende, A. M., **Chitiyo, G.**, Anderson, L. (2021) Preservice teachers' perception of virtual reality in educational settings. *International Conference on Educational Technologies.*

Fidan, I., Canfield, S., Motevalli, V., **Chitiyo, G**., & Mohammadizadeh, M. (2021). iMakerSpace best practices for shaping the 21st century workforce. *Technologies*, *9*(2) 32.

Ajuwon, P. M., **Chitiyo, G.,** Onuigbo, L. N., Ahon, A. T., & Olayi, J. E. (2020). Teachers' attitudes towards inclusion of blind or partially-sighted students in secondary schools in Nigeria. *Disability, CBR & Inclusive Development*, *31*(2).

Littrell, M. N., Michel, L., Anton, S., & **Chitiyo, G.** (2020). Board game development as a pedagogical approach to teaching undergraduate students in an interdisciplinary course that addresses contemporary societal issues. *American Society for Engineering Education Conference Proceedings.*

Littrell, M. N. **Chitiyo, G.**, Fidan, I., Cossette, M., Singer, T., & Tackett, E. (2020). Lessons learned: Multi institutional collaboration in additive manufacturing. *American Society for Engineering Education Conference Proceedings.*

Smith, S.L., & **Geist, M.J**. (2021). The TERM model: The incorporation of mentorship as a test-item improvement strategy. *Teaching and Learning in Nursing*, (16)1.

Geist, M.J., Sanders, J.R., **Arce-Trigatti, A. L.**, Lewis, E.J., Ludwig, P. (2020). Engaging students in the Next Generation NCLEX® Clinical Judgment Measurement Model through unique transdisciplinary elective course pedagogies. *Nurse Education in Practice* (under review).

Geist, M.J., Chitiyo, G., Ablakwa, C., Hensley, M., & Hornback, T. (2020). A retrospective pre-test design to measure interprofessional collaborative competencies of undergraduate nursing students. *Nurse Education Today* (under review).

Cruz, L., **Geist, M.J.**, Weathers, L., Brown, S. (2020). How do you do creative inquiry? Integrating research and practice into campus culture. *Journal on Excellence in College Teaching*, 31(2).

Callender, A., King, S. & **Howard, M.** (2020). Social validity assessment: Examples from a functional skills training intervention. *Developmental Disabilities: Diagnosis, Services, and Support*. Nova Publishing.

Baker, J. E., Howard, M. & Callender, A. (2020). Including children with special needs in the primary grades. In Baker, J. E., *Preparing to Teach Primary Grades*. Great River Learning.

Baker, J. E., Howard, M., **& Kennedy, K. J.** (2020). *Guiding behavior*. In Baker, J. E., *Preparing to Teach Primary Grades*. Great River Learning.

Osaro, A., Gambrell, J., **Isbell, J. K.,** Scott, L. M., Ellis-Hervey, N. M., & McParker, M. (2021). Microaggression: My Story as a Higher Education Professional. *Journal of Multicultural Affairs, 6*(10). https://scholarworks.sfasu.edu/cgi/siteview.cgi/jma/vol6/iss1/8

Isbell, J. K., Spears, A. M., Schmitt-Matzen, C., & Braisted, L. (2020). "Everyone off the ship": Children becoming civic minded in a summer literacy program. *Journal of Multicultural Affairs*, *5*(2). https://scholarworks.sfasu.edu/jma/vol5/iss2/1

Baker, J. E. & Meadows, J. R. (2020). *Supporting diverse learners in the primary grades*. In J. Baker (Ed.), *Preparing to teach primary grades* [e-Book]. Great River Learning Publishing.

Spears, A. M., Meadows, J. R., & Qualls, M. (2020). Using growth mindset literature to increase confidence and motivation with young readers. *Tennessee Literacy Journal.*

Silber-Furman, D. (2020). You cannot be a teacher*. Journal of Multicultural Affairs*. (accepted)

Silber-Furman, D. & Arce-Trigatti A. L. (2021) Empathy and Flexibility in Teaching in the Era of COVID-19*. Teacher Advocate*. (accepted)

Spears, A. M., & Pittman, C. (2020). Using feminist pedagogy to explore the depiction of female characters in *Jane Eyre* and *Dark Companion*. In. P. Greathouse & V. Malo-Juvera (Eds.), *Young adult and canonical literature: Pairing and teaching*. Rowman & Littlefield Publishing.

Meadows, J. R., & Spears, A. M. (2021). All of the Above: Building community and self-confidence one tetrahedron at a time. In. P. Greathouse, H. Anthony, & B. Eisenbach (Eds.), *Developing Mathematics Literacy through Adolescent Literature.* Rowman & Littlefield Publishing.

Faculty Grants

Rodriguez, J., & Potter, K.B. (Co–PIs), **Akenson, A. B., & Arce-Trigatti, A. L.** (2020) IMPACT TTU sponsors *Alien Citizen: An Earth Odyssey* film screening and writing workshop. Center Stage General Education Fund grant. ($2,000)

Rodriguez, J., & Qualls, M. C. (Co–PIs), **Arce-Trigatti, A. L., Akenson, A. B.,** & Galindo Cure, C. Futuro Student Organization & IMPACT TTU sponsor *A Constellation of Cultures* Latin American Music performance (Dr. Carlos Odria). Center Stage General Education Fund grant. ($2,500)

Aiken, M. (PI), Pardue, B. (Co–PI), **Akenson, A. B.** (Co–PI), & **Chitiyo, G.** (Co–PI). (2020). *Tennessee Tech Rural Venture Initiative.* U.S. Department of Commerce–Economic Development Administration (EDA) & Office of Innovation and Entrepreneurship (OIE). ($840,000–*submitted*)

Paradis, A., **Anthony, H. G.,** (Evaluator) & Hutson, S. (2020–2021) NCAA Innovations in Research and Practice Grant Program, *Food for Thought for Student Athletes: An Online Education Program to Fuel Athletes with Knowledge on Nutrition and Mental Health (FFT)* ($20,000) *first NCAA grant ever awarded to TTU*

Anthony, H. G. (PI). (2019–2021) *Redesign of SEED 4422/5422 to Incorporate Creative Inquiry*, ($4,550). TTU EDGE Curriculum Grant (Office of Creative Inquiry/QEP), **also awarded $1,000 travel support grant (2019–20) and $300 sustainability grant (2020–21)

Arce-Trigatti, A. L. (Co–PI), Renaissance Foundry Research Group*. (2020). BioFoundry Design: Leveraging Biomimicry to Advance Environmental and Social Sustainability Innovation in Prototypes*

Developed in Foundry-Guided Undergraduate Chemical Engineering Courses. VentureWell Faculty ($30,000)

Arce-Trigatti, A. L. (PI), Renaissance Foundry Research Group. (2020). *Holistic Foundry Undergraduate Educational Leaders (FUEL).* Tennessee Board of Regents Student Engagement, Retention, and Success (SERS) grant. ($50,000)

Arce-Trigatti, A. L. (Co–PI*). TN Tech Science Olympiad Collegiate Scholars (SOCS) Program*. Tennessee Board of Regents SERS grant. ($50,000)

Killman, C. L. (PI), Baker, J. C., & Potter, D. W. (Co–PIs). (2021). *REALS2: Retention through Engagement and Active Learning = Student Success*. Tennessee Board of Regents SERS grant. ($49,975–submitted)

Baker, J. C., (PI), Zagumny, L., Wendt, J., & Brown, A. B. (Co–PIs). (2020) T*ennessee Tech Grow Your Own (GYO) Project*. TDoE Grow Your Own Competitive Grant. ($499,904).

Potter, D. W. (PI), & Baker, J. C. (Co–PI) ARISE: *Ambassadors for Rural Innovation and STEM Education.* Tennessee Board of Regents SERS grant ($49,875)

Baker, J. C., (PI), Zagumny, L., Wendt, J., & Brown, A. B. (Co–PIs). (2020). *Tennessee Tech Special Education Add-On Endorsement Grant*. TDoE SPED Endorsement Competitive Grant. ($124,990).

Howard, M. (PI), & Smith, A. (2020). *COVID-19 CDL Tuition Recovery Relief grant*. ($44,600)

Howard, M. (PI), & Smith, A. (2020). *CDL Playground Enhancement* grant. ($4,000)

Isbell, J. K. (PI) (2021). *The Lisa Libraries* grant: 400 new children's books for Tennessee Tech Freedom School participants' home libraries ($3,500).

Spears, A. M. (PI), Isbell, J. K., & Schmitt-Matzen, C. (2020). *US Bank grant* (via TN NAME) for Jere Whitson Freedom School field trips ($1,520).

Isbell, J. K., (PI) & Schmitt-Matzen, C. (2020). *Jeff Roth Cycling Foundation Community Cycling* grant (via TN NAME) for Jere Whitson Freedom School ($1,000).

Isbell, J. K. (PI), Schmitt-Matzen, C., & Qualls, C. (2020). B*elieve in Reading Grant for Jere Whitson Freedom School* ($3,000).

Isbell, J. K. (PI), & Qualls, C. (2020). *Walmart Foundation Community Grant for Jere Whitson Freedom School* ($1,000).

Meadows, J. R. (PI) (2019–2029), Army Educational Outreach Program (AEOP) *Research Experiences for STEM Educators and Teachers (RESET).* ($1.8 million; $180,000 annually)

Spears, A. M., Schmitt-Matzen, C., Braisted, L., Qualls, C., Enix, J., Rector, L., & Sukowski, D. (2020). *Dollar General Family Literacy Grant*. ($8,000).

Faculty Presentations

Akenson, A. B., & Arce-Trigatti, A. L. (2020). *Searching for mindfulness in the research process*. Mind & Life Institute Contemplative Research Conference (CRC), "State of the field: Discoveries, opportunities, and challenges." Madison, WI/online. November 5–8.

Akenson, A. B., Arce-Trigatti, A. L., & Akenson, J. E. (2020). *Waking up: The transformative artistry of wide open knowledge environments (WOKE) in higher education*. Higher Education Pedagogies, Policy, and Practice (HEPPP) Research Network Symposium, "Exploring Expertise in Teaching in Higher Education." Bristol, UK. October 16

Akenson, A. B. (2020). *Mindfulness-Based Stress Reduction Implementation for Chronic Illnesses (MBSR–ICI) Program Planning and Evaluation (PPE) model*. International Conference on Mindfulness annual conference, "Diversity & equality—leaving no one behind." Aarhus, Denmark. June 23–26 (*conference postponed due to COVID–19 pandemic*)

Akenson, A. B., Arce-Trigatti, A. L., & Akenson, J. E. (2020). *Transforming mindfully through Wide Open Knowledge Environments (WOKE) in higher education*. American Educational Studies Association (AESA) annual conference, "Healing the mind/body/soul: revolutionary education for liberation." San Antonio, TX. October 28–November 1 *(conference canceled due to COVID–19 pandemic*)

Akenson, A. B., Silber-Furman, D., & Arce-Trigatti, A. L. (2020). *Living art, activism, and education through poetry*. National Association of Multicultural Education (NAME) annual conference, "Living multicultural education: Peace & justice through the ballot box & activism." Montgomery, AL (moved online). October 8–10

Akenson, J. E., Akenson, A. B., & Arce-Trigatti, A. L. (2020). *Creating wide open knowledge environments (WOKE) in higher education*. Tennessee National Association of Multicultural Education (NAME), "Awake and active: Equity, empowerment, and civility in challenging times." Cookeville, TN. July 17 (*conference canceled due to COVID–19 pandemic*)

Adams, B., **Arce-Trigatti, A. L.,** Jorgensen, S., & Arce, P. (2020). Implementing an inquiry-guided laboratory manual with educational learning objectives aligned to abet accreditation standards. *Proceedings from the 2020 American Society for Engineering Education Annual Conference*. June 21-24, 2020. Montréal, Québec, Canada.

Anthony, H. G., & Robinson, S. J. (2021). *Affordances of a Noyce Program-STEM Center Partnership*. Paper presented at the Fourth Global Conference on Education and Research (GLOCER), June virtual.

Anthony, H. G., & Robinson, S. J. (2021). *Recruiting STEM majors into the teaching profession*. Paper presented at the Seventeenth International Congress of Qualitative Inquiry, Urbana-Champaign, IL.

Anthony, H. G., & Robinson, S. J. (2021, June). *Increasing the STEM teaching pipeline*. Poster presented at the Tenth Annual (2021) Science, Technology, Engineering, Arts, Math, & Education (STEM/STEAM) International Conference, Honolulu, HI.

Wilson, C., & **Anthony, H. G.** (2020). *Preservice math teachers' perceptions of posing geometry problems to rural high school students*. Paper presented at the Sixteenth International Congress of Qualitative Inquiry, Urbana-Champaign, IL (*served as Panel Chair: Education: Mathematics Education**)** (Canceled due to COVID-19)*

Anthony, H. G., Pérez, M., Gulley, B., & England, M. (2020). *Trends in STEM: Content analysis of international STEM education research journals*. Paper presented at the Sixteenth International Congress of Qualitative Inquiry, Urbana-Champaign, IL *served as Panel Chair: Education: Mathematics Education**)** (Canceled due to COVID-19)*

Robinson, S. J., & **Anthony, H. G.** (2021). *Affordances of a Noyce Program-STEM Center Partnership*. Poster presented at the American Association of Physics Teachers (AAPT) Summer Meeting, Washington, DC.

Anthony, H. G. (2021). *Brief history and evolution of the Tennessee Association of Mathematics Teacher Educators (TAMTE): 2007 to present*. Invited panel presentation at the 25th annual Association of Mathematics Teacher Educators (AMTE) conference (virtual). (Session 93. Recognizing the evolution of AMTE affiliates: From overlooked opportunities to obstacles overcome). Session Facilitator: Hartono Tjoe (Chair AMTE Affiliate Connections Committee).

Anthony, H. G., Pérez, M., Wilson, C., Gulley, B., & England, M. (2020). *Trends in STEM: Content analysis of international STEM education research journals*. Paper presented at the 14th annual Tennessee STEM Education Research Conference, Cookeville, TN.

Anthony, H. G. (2021). *Math letter writing pen pal experience as a practicum alternative*. Paper presented at the 2021 Massachusetts Project Kaleidoscope (PKAL) Network Winter Meeting. Virtually hosted by Worcester Polytechnic Institute (Center for Project-Based Learning) and AAC&U.

Deurlein, M., **Baker, J.C.,** Dula, M., & Chatis, C. (2020). *Using educator preparation provider data to inform program approval and improve program efficiency.* Virtual Presentation for the Statewide Longitudinal Data Systems (SLDS) Grant Program through the National Center for Education Statistics.

Baker, J.E. (2020, July). Just the ticket: *Virtual STEM field trips for grades K-5.* Tennessee Science Teachers Association Digital Science Teaching Training.

Meadow, J., & Baker, J.E. (2020, July). *STEM at home: Resources shared by Oakley STEM Center at Tennessee Tech.* Tennessee Science Teachers Association Digital Science Teaching Training.

Bounds, P. (2021) Shifting Planets of Belief: Perceptions of American English and Regional Speech. *Southeastern Conference on Linguistics*, May 13–15.

Smith, M., Potter, K., & Anderson L., & **Chitiyo, G.** (May, 2021). Insights about Equity and Social Justice Learned through Engaging in Academic Content: Emerging Evaluator Perspectives. Presentation made virtually at the Emergent Voices in Evaluation (EViE) Conference, hosted by the University of North Carolina at Greensboro.

Beach, J., Mathende, A. M., **Chitiyo, G.**, Anderson, L. (March, 2021) Preservice Teachers' perception of Virtual Reality in Educational Settings. Paper presented virtually at the 8th International Conference on Educational Technologies (ICEduTech).

Hanna, T., Roberts, T., Hurley, S. Jared, B., Lee, E., Hellman, A., **Chitiyo, G**. & Hurley, J. (2020, October). Improvement of quality of life for nursing home residents through the "Music & Memory" Program (Outcomes), TNA District 9 Meeting.

Tolley, L. M., LaVelle, K., & **Chitiyo, G.** (2020, October). *Education(al evaluation) in the time of COVID-19: How do we shine our light on the unknown?* American Evaluation Association (AEA) Annual Conference, Portland, OR, United States.

Littrell, M. N., Michel, L., Anton, S., & **Chitiyo, G.** (2020, June). Board game development as a pedagogical approach to teaching undergraduate students in an interdisciplinary course that

addresses contemporary societal issues. Paper presented (virtually) at the American Society for Engineering Education. Montréal, Québec, Canada.

Littrell, M. N., **Chitiyo, G.**, Fidan, I., Cossette, M., Singer, T., & Tackett, E. (2020, June). Lessons Learned: Multi Institutional Collaboration in Additive Manufacturing. Paper presented at the American Society for Engineering Education. Montréal, Québec, Canada.

Spears, A. M., Rector, L., & **Isbell, J. K.** (2021). Graffiti sparks community activism: Children's democratic engagement through a posthumanist lens. American Educational Studies Association Annual Conference. Portland, Oregon (submitted).

Rector, L., **Spears, A. M.**, & **Isbell, J. K.** (2021). Cultural capital, classism, & lived experiences: Teachers' decision-making in literacy education. National Association of Multicultural Education. Anaheim, California (submitted).

Spears, A. M., & **Isbell, J. K.** (2020, May). *Focusing on the now: Rethinking literacy and learning with posthumanism*. 17th International Congress of Qualitative Inquiry (virtual), Champaign-Urbana, Illinois.

Isbell, J. K., Young, L., Sukowski, D., & Enix, J. (2020, July). *Monsters in our schools: Exploring the intended and unintended consequences of our actions*. Paper accepted for presentation at 2nd annual Tennessee NAME conference, Cookeville, TN (conference cancelled due to COCID19).

Isbell, J. K., Spears, A. M., Schmitt-Matzen, C., & Braisted, L. (2020, July) *Knowing/becoming/doing: Civic minded children in a summer literacy program*. Paper accepted for presentation at 2nd annual Tennessee NAME conference, Cookeville, TN (conference cancelled due to COCID19).

Scarborough E., & **Kennedy, K. J.** (May, 2021). *Using virtual reality to encourage social interaction between children with autism and their siblings during game time*. Poster presentation to be presented at the 47th Association for Behavior Analysis International Conference, Virtual conference.

Dzenga, C. & **Kennedy, K. J.** (May, 2021). *A literature review of teaching individuals with developmental disabilities to engage in leisure activities*. Poster presentation to be presented at the 47th Association for Behavior Analysis International Conference, Virtual conference.

Richards, J. R., & **Phillips, M. B.** (2020). *Case studies of Protestant Christian leaders: Church culture and health behaviors*. Oral Presentation at the Ethnographic & Qualitative Research Conference, Las Vegas, NV.

Phillips, M. B., & **Richards, J. R.** (2020). *Exploring Protestant Christian perceptions of health behaviors: A qualitative study in Bible Belt churches*. Oral Presentation at the Ethnographic & Qualitative Research Conference, Las Vegas, NV.

Silber-Furman, D., Fidan, P., & ElDaba, A. (2020). *Windows into Multicultural Literacy*. 30th Annual International Conference of the National Association for Multicultural Education. October 8–10, 020 (virtual).

Silber-Furman, D. (2021). *Your English is So Good! Exploring the Sociocultural Elements that inform Second Language Acquisition*, Southeastern Conference of Linguistics, SECOL XXVIII. May 13-15, 2021 (online).

Spears, A. M., Schmitt-Matzen, C., Braisted, L., & Beach, N. (2020, October). *Taking Literacy Outside: Outcomes from a year- long observational study.* International Literacy Association. Columbus, OH. (canceled due to COVID-19)

Faculty-delivered In-Service & Professional Development Workshops

Arce-Trigatti, A. L., & Haynes, A. (2020). *Assessing Critical Thinking Skills in a Social Problems Course.* Workshop presented at the 2020 Virtual Critical & Creative Thinking Conference, University of South Florida. September 30-October 2, 2020.

Arce, P. E., **Arce-Trigatti, A. L.**, Jorgensen, S., & Sanders, J. R. (2020). *The Renaissance Foundry Model as an Effective Tool for Collaborative and Innovation-Driven Learning.* Workshop session conducted as a Digital Training Series for the University of Washington Engineering Faculty. August 4, 2020. Conducted virtually in Cookeville, Tennessee.

Silber-Furman, D., & **Arce-Trigatti, A. L.** (2020). *Exploring ELL's Cognitive Growth: Culture, History, and Language Acquisition.* Putnam County Schools Professional Development. Workshop session conducted at Jere Whitson Elementary School for the English as a Second Language Training Series. July 27, 2020. Conducted virtually in Cookeville, Tennessee.

Arce-Trigatti, A. L., Jorgensen, S., Arce, P. E., & Sanders, J. R. (2020). *The Renaissance Foundry Model as an Effective Tool for Online Learning for Grades 6-12*. Workshop session conducted as a Digital Training Series for the Tennessee Science Teachers Association. July 21, 2020. Conducted virtually in Cookeville, Tennessee.

Anthony, H. G. (2021, May). *Probability games: Sharing session.* Session presented at the Tennessee Mathematics/Science for Elementary Education Conference, Clarkesville, TN.

Greathouse, P., & **Anthony, H. G.** (2020, December). *Developing mathematics literacy through young adult literature*. Session presented at the Literacy Association of Tennessee (LAT) (virtual).

Anthony, H. G. (2021). *Enhancing Math Content in CTE Courses* (March). Half-day workshop for Jackson County CTE teachers.

Baker, J. E., & Baker, T. (2020). *UCWP College, Career, and Community Writers Program* (with T. Baker). *Upper Cumberland Writing Project* half-day workshop for English teachers grades 6–12). Cookeville, TN.

Kennedy, K. J. (June, 2021). *An autism training for first responders- Refresher.* Partial day training session for Van Buren County Sherriff's department. Spencer, TN.

Kennedy, K. J. (June, 2020). *An autism training for first responders.* Partial day training session for Van Buren County Sherriff's department. Spencer, TN.

Richards, J. R. (2021). Healthy hints and tips: Staying healthy at home. College of Education Student, Alumni, and Faculty series at Tennessee Technological University, Cookeville, TN.

Student Publications

Chitiyo, G., Zagumny, L., **Littrell, M. N.**, Akenson, A. B., Besnoy, K., **Davis, K. M., & Mathende, A. M.** (2021). Perceptions and experiences of using chess as a heuristic pedagogical method. *International Journal Curriculum & Instruction*, *13*(2). (*in press*)

Littrell, M. N., Michel, L., Anton, S., & Chitiyo, G. (2020). Board game development as a pedagogical approach to teaching undergraduate students in an interdisciplinary course that addresses contemporary societal issues. *American Society for Engineering Education Conference Proceedings.*

Littrell, M. N., Chitiyo, G., Fidan, I., Cossette, M., Singer, T., & Tackett, E. (2020). Lessons Learned: Multi Institutional Collaboration in Additive Manufacturing. *American Society for Engineering Education Conference Proceedings.*

Spears, A. M., Meadows, J. R., & **Qualls, M**. (2020). Using growth mindset literature to increase confidence and motivation with young readers. *Tennessee Literacy Journal.*

Womack, P., Arce-Trigatti, A. L., Arce, P. E., Jorgensen, S., & Sanders, J. R. (2021). Exploring the Role of Collaboration in the Development of Community Leaders: Student Experiences from a Learning Community in the STEM Foundry Heritage Fellows. *American Society for Engineering Education Southeastern Conference Proceedings.*

Dzenga, C, G., Chitiyo, A., Mathende, A, M (2021, under review) An Assessment of Post-Secondary Outcomes for Student with Developmental Disabilities. *Journal of Autism and Developmental Disorders.*

Chitiyo, A., & **Dzenga, C. G.** (2021, In Press). Special and Inclusive Education Policy in Botswana, Malawi, Zambia, Zimbabwe, and Namibia. *Journal of Special Education Practice*.

Chitiyo, A., King, S., Krizon, M., & **Dzenga, G.** (2021, under review). An Evaluation of Reading Interventions Research for Students with EBD using CEC Quality Indicators. *Behavioral Disorders*.

Enix, J. (2020). Student publication strategies that work. *The English Journal (under review)*

Beasley, K., Chitiyo G., & **Smith, M.** (2021). The relationship between physical abuse and factors of loneliness and social dissatisfaction among school children. *Social Development.* (under review)

Smith, M. (2021). Gender microaggressions: Experiences from a doctoral student. *Journal of Multicultural Affairs.* (accepted)

Smith, M. & Chitiyo, G. (2021) The moderating effects of gender and ethnicity on abuse and childhood problem behaviors. *Journal of Child & Adolescent Trauma*. (under review)

Sukowski, D. (2021). Content analysis in use: Exploring a new (to me) qualitative analytical perspective. *The Qualitative Report*. (under review).

Sukowski, D. & **Rector, L.** (2020). Transactional theory in the classroom: Students' approaches to a playground. *Tennessee Literacy Journal*. (under review).

Student Grants

Rodriguez, J., & **Potter, K.B.** (Co–PIs), Akenson, A. B., & Arce-Trigatti, A. L. (2020) IMPACT TTU sponsors *Alien Citizen: An Earth Odyssey* film screening and writing workshop. Center Stage General Education Fund grant. ($2,000)

Rodriguez, J., & **Qualls, M. C.** (Co–PIs), Arce-Trigatti, A. L., Akenson, A. B., & Galindo Cure, C. Futuro Student Organization & IMPACT TTU sponsor *A Constellation of Cultures* Latin American Music performance (Dr. Carlos Odria). Center Stage General Education Fund grant. ($2,500)

Spears, A. M., Isbell, J. K., & **Schmitt-Matzen, C.** (2020). US Bank grant (via TN NAME) for Jere Whitson Freedom School field trips ($1,520).

Isbell, J. K., & **Schmitt-Matzen, C**. (2020). *Jeff Roth Cycling Foundation Community Cycling* grant (via TN NAME) for Jere Whitson Freedom School ($1,000).

Isbell, J. K., **Schmitt-Matzen, C**., & Qualls, M. (2020). B*elieve in Reading Grant for Jere Whitson Freedom School* ($3,000).

Isbell, J. K., & **Qualls, M. C.** (2020). *Walmart Foundation Community Grant for Jere Whitson Freedom School* ($1,000).

Spears, A. M., **Schmitt-Matzen, C.,** Braisted, L., **Qualls, M. C., Enix, J., Rector, L., & Sukowski, D**. (2020). *Dollar General Family Literacy Grant*. ($8,000).

Student Presentations

Anthony, H. G., **Pérez, M., Gulley, B., & England, M.** (2020). *Trends in STEM: Content analysis of international STEM education research journals*. Paper presented at the Sixteenth International Congress of Qualitative Inquiry, Urbana-Champaign, IL *served as Panel Chair: Education: Mathematics Education**)** (Canceled due to COVID-19)*

Anthony, H. G., **Pérez, M., Wilson, C., Gulley, B., & England, M.** (2020). *Trends in STEM: Content analysis of international STEM education research journals*. Paper presented at the 14th annual Tennessee STEM Education Research Conference, Cookeville, TN.

Perez, M., Campbell-Gulley, B. M., Wilson, C., & England, M. (2020, April 29). *Content analysis of international STEM education research journals* [Poster session]. Annual Research and Creative Inquiry Day, Tennessee Technological University, Cookeville, TN, United States. https://publish.tntech.edu/index.php/PSRCI

Wilson, C., & Anthony, H. G. (2020). *Preservice math teachers' perceptions of posing geometry problems to rural high school students*. Paper presented at the Sixteenth International Congress of Qualitative Inquiry, Urbana-Champaign, IL (*served as Panel Chair: Education: Mathematics Education**)** (Canceled due to COVID-19)*

Womack, P., Arce-Trigatti, A. L., Arce, P. E., Jorgensen, S., & Sanders, J. R. (2021). Exploring the Role of Collaboration in the Development of Community Leaders: Student Experiences from a Learning Community in the STEM Foundry Heritage Fellows. *American Society for Engineering Education Southeastern Conference.* March 8-10, 2021. James Madison University, Virginia.

Littrell, M. N., Michel, L., Anton, S., & Chitiyo, G. (2020, June). Board game development as a pedagogical approach to teaching undergraduate students in an interdisciplinary course that addresses contemporary societal issues. Paper presented (virtually) at the American Society for Engineering Education. Montréal, Québec, Canada.

Littrell, M. N., Chitiyo, G., Fidan, I., Cossette, M., Singer, T., & Tackett, E. (2020, June). Lessons Learned: Multi Institutional Collaboration in Additive Manufacturing. Paper presented at the American Society for Engineering Education. Montréal, Québec, Canada.

Beach, J., **Mathende, A. M.,** Chitiyo, G., **Anderson, L.** (March, 2021) Preservice Teachers' perception of Virtual Reality in Educational Settings. Paper presented virtually at the 8th International Conference on Educational Technologies (ICEduTech).

Potter, K., Lawrence, K., M, Mathende, A., & Chitiyo, G. (April, 2021). *Writing Ability and Gender as Moderators of the Relationship Between Instrumental Motivation and Academic Self-Efficacy.* Presentation made at the 16th Annual Student Research and Creative Inquiry day at Tennessee Tech University, Cookeville, TN.

Smith, M., Potter, K., & **Anderson L.**, & Chitiyo, G. (May, 2021). Insights about Equity and Social Justice Learned through Engaging in Academic Content: Emerging Evaluator Perspectives. Presentation made virtually at the Emergent Voices in Evaluation (EViE) Conference, hosted by the University of North Carolina at Greensboro.

Smith, M., & Chitiyo, G. (April, 2021). The moderating effects of gender and ethnicity on abuse and childhood problem behaviors. *Writing Ability and Gender as Moderators of the Relationship Between Instrumental Motivation and Academic Self-Efficacy.* Presentation made at the 16th Annual Student Research and Creative Inquiry day at Tennessee Tech University, Cookeville, TN.

Spears, A., **Rector, L**., & Isbell, J. K. (2021). *Graffiti sparks community activism: Children's democratic engagement through a posthumanist lens*. American Educational Studies Association Annual Conference. Portland, Oregon (submitted).

Rector, L., Spears, A., & Isbell, J. K. (2021). *Cultural capital, classism, & lived experiences: Teachers' decision-making in literacy education*. National Association of Multicultural Education. Anaheim, California (submitted).

Isbell, J. K., Young, L., Sukowski, D., & Enix, J. (2020, July). *Monsters in our schools: Exploring the intended and unintended consequences of our actions*. Paper accepted for presentation at 2nd annual Tennessee NAME conference, Cookeville, TN (conference cancelled due to COCID19).

Isbell, J. K., Spears, A. M., **Schmitt-Matzen, C.,** & Braisted, L. (2020, July) *Knowing/becoming/doing: Civic minded children in a summer literacy program*. Paper accepted for presentation at 2nd annual Tennessee NAME conference, Cookeville, TN (conference cancelled due to COCID19).

Scarborough E., & Kennedy, K. J. (May, 2021). *Using virtual reality to encourage social interaction between children with autism and their siblings during game time*. Poster presentation to be presented at the 47th Association for Behavior Analysis International Conference, Virtual conference.

Dzenga, C. **G.** & Kennedy, K. J. (May, 2021). *A literature review of teaching individuals with developmental disabilities to engage in leisure activities*. Poster presentation to be presented at the 47th Association for Behavior Analysis International Conference, Virtual conference.

Dzenga, C. G (April 2021) Special Education Teachers' Perspectives on Leisure Activities Participation by Adults with Developmental Disabilities; Poster presentation at The Research and creative Day at Tennessee Technological University

Eduah, G. D., (2020). The Untapped Natural Resource in Ghana's Agricultural Sector: The Role of Africans in the Diaspora. Scheduled Presentation at *The 8th Annual Africa Conference*. Tennessee State University; Nashville, TN. (Cancelled because of COVID-19)

Elizer, N. H. (2021). *Monsters Look Different in the Light: Generation Z & Fourth Wave Feminism*. Dissertation presented at the National Association for Multicultural Education 2019 International Conference, Anaheim, CA Nov 2021. (proposal submitted, not yet accepted)

Elizer, N. H. (2020). *Defying gravity: An ethnodrama*. Script presented at the 16th International Congress of Qualitative Inquiry, University of Illinois, Urbana-Champaign, IL, May 20–23. (conference canceled.)

Enix, J. (2021). Capitalism, accountability, goal-oriented learning, and the resulting inequity in rural Tennessee high schools. Upper Cumberland Literacy Association (UCLA) conference. Murfreesboro, TN. December 2021.

Pérez, M., & **Wilson, C.** (2020). *Productive Problems.* Middle Tennessee Mathematics Teachers (MTMT) Conference. Nashville, TN. February 22.

Potter, K., Lawrence, K**., Mathende, A**., & Chitiyo, G. (2021). *Writing ability and gender as moderators of the relationship between instrumental motivation and academic self-efficacy* [Poster presentation]. Tennessee Technological University Annual Research and Inquiry Day, Cookeville, TN, United States.

Potter, K. (2020, June 23). *Rural reimagined overview and annual accomplishments* [Online webinar presentation]. Board of Trustees Meeting, Cookeville, TN, United States. https://www.youtube.com/watch?v=y40OFq1lCAI

Aikens, M., & **Potter, K.** (2020). *Tennessee technological university rural reimagined* [Conference session]. Upper Cumberland Education Leaders, Cookeville, TN, United States.

Severt, B. (2021). Experiences and Perspectives of High School Football Coaches in Managing Athletic Injuries and Medical Conditions in a Rural Setting. Poster presented at: Student Research and Creative Inquiry Day; 2021 April 13-16; Tennessee Technological University

Severt, B. (2021). Experiences and Perspectives of High School Football Coaches in Managing Athletic Injuries and Medical Conditions in a Rural Setting. Poster presented at: 17th International Congress of Qualitative Inquiry; 2021, May 19-22; Virtual Meeting

Spears, A. M., **Schmitt-Matzen, C**., Braisted, L., & Beach, N. (2020, October). *Taking Literacy Outside: Outcomes from a year- long observational study.* International Literacy Association. Columbus, OH. (canceled due to COVID-19).

Enix J. (2020). Ethnographic considerations in classroom layout and design. Upper Cumberland Literacy Association (UCLA) conference. Cookeville, TN. June 2020.