Writing the T-32 Curriculum and Evaluation Components: CTSI Office of Educational Development & Evaluation

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INTRODUCTION, WRITING THE T32 GRANT

1. Designed for individuals planning to pursue careers in primary care research.

2. Offers a supervised research program with the primary objective of developing/extending research skills and knowledge to prepare trainees for a research career.

3. Given to primary care researchers who will facilitate training in problems, methods and settings that previously have been inadequately pursued or utilized in the U.S.

4. Designed to increase numbers of qualified individuals who are willing to conduct research in primary medical care and generate requisite knowledge with the long-term goal that ensures all Americans have access to primary care.
Challenges to winning grant awards

• Lack of clarity
• Inexplicable relationship between grant objectives and outcomes
• Little to no relationship between curriculum, grant aims and outcomes
• Lack of clarity as to how training program ensures competency attainment
• Poorly conceived or insufficient evaluation
Challenges posed to grant writers

Lack of clarity
• Detail that describes training programs, and how training is likely to result in trainees' development of an independent line of research, one that is distinguishable from that of the mentor not clearly stated.

Intended outcomes/ benefits not specified
• Explicit details explaining how program of study will result in intended outcomes and how those outcomes will be assessed is not provided.
A Framework for Grant Development

• Use four (4) guiding questions to frame the development of your proposal.

• Ensure that the grant proposal contents provides exquisite detail and an exacting plan that corresponds to these questions.
Questions to Guide Development of Curriculum and Evaluation Components

1. What will trainees experience, do, or study?

2. What are the objectives of the training program?

3. What is the sequence of training activities?

4. How will achievement of training program activities be evaluated?
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• **Services** – Write evaluation components of training and clinical science translational grants.

• **Expertise** -
  • Map competencies to courses and program experiences
  • Provide mentored experiences in conceptualizing educational research studies,
  • Develop program evaluation plans.
  • Assist with analysis of qualitative and quantitative data.
  • Align inputs and training activities with measurement foci and intended outcomes.
What we have accomplished – Contributed to writing evaluation components of multiple T32s, T35, and CTSA 2.0 renewal award.

Co-developed Educational Scholarship Program (ESP - http://facdev.ufhealth.org/resources/educational-scholarship-program/) for Health Science College faculty.
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• **Currently** track all CTSA-funded trainees to assess their core competencies, attainment of milestones, and academic performance into the future after completion of the program.

• Provide Pedagogical interventions and opportunities that foster faculty growth in teaching, educational research, and assessment via ESP and new courses.
  
  Created three new courses:
  
  • *So You Want to be a Professor*
  
  • *Qualitative Literacy for Translational Researchers* – Being taught this semester (enrollees from COM, PHHP, COD, CVM, COJ, CON)
  
  • *Leadership for Innovators* - Projected for fall 2016
<table>
<thead>
<tr>
<th>MENTOR ACADEMY</th>
<th>CLINICAL COORDINATORS/T32 FELLOWS</th>
<th>TL1 SCHOLAR</th>
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<tbody>
<tr>
<td>1. Assess Spring 2015 participants' outcomes. 2. Pre/Post test changes in Spring 2016 participants' mentoring skills.</td>
<td>1. Assessing two online training programs in context of the core knowledge and skills requirements for clinical research professionals involved in the conduct and design of clinical trials with goal of establishing common rubrics.</td>
<td>1. Pre/Post test changes in researcher self-efficacy, readiness for collaboration, preference for unidisciplinary, multidisciplinary or interdisciplinary research as function of taking a team science course.</td>
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<td>3. Compare outcomes of Spring 2016 to Spring 2015 participants. 4. Analyzing reflective writings of current cohort to assess impact of program.</td>
<td>2. Assess T32 pretest measures of research self-efficacy, participation in cross-disciplinary collaboration, preference for unidisciplinary, multidisciplinary or interdisciplinary research.</td>
<td>2. Qualitative study of TL1 early program and mentor experiences.</td>
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<td>3. Describe T32 perceptions of their learning and mentoring experiences and (3) T32 mentors perceptions of the type of mentoring they provide to postdocs.</td>
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Provide an evaluation model

• Demonstrate alignment among program, process and outcomes

• Signifies researcher’s intent to assess all aspects of trainee experience including short- and long-term outcomes and impact goals of the grant
EVALUATION

Inputs

UF CTSI Organization:
- Leadership, Research Services, Education Programs, Community Engagement

Funding:
- CTSF Funds, KL2, Institutional Sponsored research grants

Faculty:
- Mentors from 6 HSC Colleges, Program Leadership

Learners:
- PhD & Professional Degree Fellows and Jr. Faculty

Training Programs:
- KL2, MA, CRPC Degree Programs, CTS MS & PhD

Assessment Plan:
- CTS Core Competencies, Assessment Tools

Motivations:
- Demand for new models of research translation and need to diversify the workforce

Activities

CTSI Coordination:
- Education & Training Directorate, KL2, Advisory Committee

For CTS Didactic Coursework:
- Research Literacy, Leadership, Training for Educators, Grant Writing

Mentored Team Research:
- KL2 Scholar, KL2 Mentor Teams

Professional Development:
- Leadership, Communication, Research Management, Teaching

Career Development:
- Individual Development Plans, Opportunity of onsite training at other CTSA's

Outputs (Short-Term)

New Courses:
- Leadership for Innovators, Quantitative & Qualitative Research

Academic Performance:
- Course grade MS Degree, Certificate

Research Performance:
- CTS Competencies, Team Research Projects, CTS Review Papers, T0-T4 Dissertation Chapters, Publications

Professionalism:
- CTS Network for Professional Development in Multiple Professions

Improved Attitudes Toward:
- Team Science, Research Self-Efficacy, Cultural Competence, Collaboration, Readiness, Leadership, Mentoring

Career Trajectories:
- Participation in Career Development

Outcomes (Long-Term)

KL2 Graduates:
- Transdisciplinary Clinical & Translational Team Science Expertise

Effective Training:
- Active Research Programs: Research funding

Research Performance:
- New UF Collaborative Research Projects, Projects across multiple health professions

Team Science:
- Scholarships: Publications, Presentations, Intellectual Property

Professionalism:
- UF Impact: Institutionalization of CTS Training Program, Professional Development, Career Development

Impact Goals

Cadre of CTS Translational Research Leaders:
- Across all Health Science Disciplines

CTSA Hub for Health Sciences:
- Professional Development for Dentistry, Nursing, Pharmacy, Veterinary Medicine, OT/PT and other health professions networked in CTSA Hubs

National Impacts:
- Dissemination of courses in research literacies, leadership and preparation for the professoriate

National CTSA Consortium Supporting Clinical & Translational Research Work

Innovative, Transdisciplinary Team Science Approaches to Improving Human Health

Improved Health for Individuals and Populations

CTSA Goals
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<th>Training Component</th>
<th>Assessment Foci</th>
<th>Metrics/Methods</th>
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<td><strong>Input</strong></td>
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| Learners           | • Recruiting & admissions  
|                    | • Diversity        | • Trainees’ background (Prior experience with research, publications and presentations)  
|                    | • Diversity        | • Demographics  |
| Faculty            | • Plan/implementation alignment  
|                    | • Quality of mentoring  
|                    | • Diversity        | • Semi-structured interviews  
|                    | • Diversity        | • Research funding & publications  
|                    | • Quality of mentoring | • Mentorship track record  |
| Activities         | • Plan/implementation alignment  
|                    | • Impact on curriculum  
|                    | • Quality of instruction | • Participations as mentors and instructors  |
| Courses            | • Interdisciplinarity  
|                    | • Quality of mentoring | • Review of course syllabi  
|                    | • Quality of instruction | • Enrollment  |
| KL2 Research Teams | • Plan/implementation alignment  
|                    | • Impact on curriculum  
|                    | • Quality of instruction | • Course evaluations & peer observation  
|                    | • Interdisciplinarity  
| KL2 Mentoring Teams| • Quality of mentoring | • Participation (number, demographics)  
| Professional & Career | • Plan/implementation alignment  
| Development         | • Impact on curriculum  
| (Short-Term)        | • Quality of instruction | • Meeting frequency  
| Outputs             | • Interdisciplinarity  
| | • Quality of mentoring | • Faculty development of mentors  |
| Courses            | • Plan/implementation alignment  
| | • Courses taught, enrollment | • Content review  
| | • Mapping to CTS competencies | • Sessions offered, learner enrollment  
| Academic Performance| • CTS curriculum knowledge base  
| | • CTS research competencies | • Learner evaluations & peer observation  |
| Research Performance| • Research progress | • |
Participants... experience exposure to both disciplines through ... courses and “side-by-side” training ... gain an appreciation for the potential value of clinical and basic science research partnerships, to gain better understanding of the pathophysiology of chronic and critical research questions.

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<th>Modified Proposal Excerpt</th>
<th>Suggested Change</th>
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<td>Through engagement in advanced coursework and working in mentor’s lab or clinic, trainees will be expected to: (1) <strong>identify</strong> overarching research questions, (2) <strong>develop</strong> a research study that will identify or strengthen understanding of underlying mechanisms of the pathophysiology of chronic pain, leading to development therapeutics, and (3) <strong>identify</strong> psycho-social interventions that will minimize chronic pain.</td>
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| Emphasizes use of regular meetings, both informal and formal, between trainees and core faculty; weekly informal discussions to create optimal environment for interaction between trainees and mentors. | • Meetings with mentors will be scheduled weekly.  
• Mentors will ask trainee to summarize their experiences, ask questions about what they did not understand and what was of interest.  
• Through written work, trainee will be asked to show how they will locate the relevant research problem, formulate research questions, select the research, anticipate data collection process and analysis to address the research problem. |
1. Describe career development plan in detail.

2. Proposed a training program that supersedes a graduate level degree program.

3. Identify how training program will enhance attainment of specific outcomes trainee seeks.

4. Shows links between coursework and proposed research.

5. Describe content and frequency of meetings with supervisions.

6. Explain how scholars’ work will help others, lead to improved or new clinical understandings, new studies, or be cited by others in the field.
1. Describe potential confounds in proposed research; explain how your proposal addresses/overcomes these limitations.

2. Provide a comprehensive overview of the literature; do not report selectively.

3. Write an analytical plan and use power analysis to support sample size.

4. Explain why proposed training is essential to the development of the scientists you propose to train.
Writing Objectives for Required Training Courses - Problems and Quick Fixes
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<tr>
<td>Science of Clinical Research</td>
<td>Describe the application of randomization; sample size; blinding; analysis of clinical trails data.</td>
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<td>After discussing advantages/limitations of quasi-experimental designs, non-equivalent control group designs, interrupted times series designs, case series, and meta-analysis, <strong>select appropriate research design.</strong></td>
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<td>Psychosocial Aspects of Research Development</td>
<td>Identify quality of life measures, models of health decision-making and attitudinal/behavioral measures. Describe threats to validity. <strong>Select a scale with psychometric properties including reliability and construct validity that support its use.</strong></td>
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### Proposal Excerpt vs. Suggested Change

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<td><strong>Research Development</strong> – Ability to:</td>
<td>o Develop research ideas and hypotheses.</td>
<td>o Based on reading of scientific literature, present and critique strengths and weaknesses of potential research designs that could be used to study research ideas.</td>
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<td><strong>Research Design</strong> –</td>
<td>o Evaluate trainee’s ability to Integrate basic, clinical, and applied research strategies.</td>
<td>o Apply bio-statistical and epidemiological methods to clinical research data.</td>
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<td>o Understand different designs, applications, and the potential for translation.</td>
<td>o Develop statistical analysis plan and implement strategies for statistical design.</td>
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<td>o Communicate the resolution of those problems in study findings in oral and written reports for colleagues and local community.</td>
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Summary of Key Points

1. Provide a detailed and comprehensive description of training program and link it with training objectives.

2. Stress the scientific, career-related, and patient-care benefits of the research that are supported by the training program.
3. Describe a rigorous evaluation plan that assesses the quality and effectiveness of training. Explain how the plan will track adequacy and sufficiency in trainee’s career outcomes of trainees and how the plan will determine the successfulness of the program.

4. Do not let fulfillment of grant evaluation be the end point. Seek to publish and present research findings that advance science and patient care.
Summary of Key Points

5. Describe the tracking system for participants following program completion. Consider using social network analysis to demonstrate changes in T32 trainee’s publications and career development.

6. Seek assistance from the CTSI Office of Educational Development & Evaluation early during development of your grant preparation – it will improve the proposal quality and communicate to reviewers that you have developed a proposal that provides both training and a commitment to evaluating program quality.
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