ATLAS Research Fellowship for Doctoral Students

February 16, 2022

Accessible Teaching, Learning, and Assessment Systems (ATLAS) at the University of Kansas seeks proposals from doctoral students to conduct research and evaluation projects in support of our technology-based learning and assessment systems. Doctoral students from accredited institutions in the United States and Canada are eligible to apply. Applicants can submit a proposal for either a one-semester project (i.e., fall 2022, spring 2023, or summer 2023) or a two-semester project (i.e., fall 2022 and spring 2023 or spring 2023 and summer 2023).

ATLAS promotes learning by creating accessible and academically rigorous technology-based learning and assessment systems for all students with a special focus on students with disabilities, struggling learners, and their teachers through several projects focused on improving student outcomes. ATLAS's learning map models, assessment design, and teacher resources are informed by the center's research projects and by innovations in psychometrics that support the measurement of map-based learning. ATLAS fosters partnerships with diverse organizations that share our focus and commitment. Additional information about ATLAS's projects can be found on the ATLAS website (http://atlas.ku.edu/).

Applicants are encouraged to submit a 500-word project abstract via a Qualtrics link by **April 4, 2022**. Abstracts are not required, but applicants may benefit from submitting an abstract to obtain feedback on the proposal, which may improve its likelihood of getting funded. Abstracts should include the purpose of the research and research questions, an overview of the proposed methodology, and a description of the potential implications of the research for ATLAS. Applicants who submit abstracts will receive feedback from ATLAS staff.

Applicants must fill out an application and upload a 2,000-word full proposal via a separate Qualtrics link by **May 20, 2022.** Applicants may send questions about the fellowship program, priority areas, or other topics to atlas-aai@ku.edu. Applicants who submit applications and full proposals will be notified of decisions by the week of June 20, 2022.

Scope of Work

ATLAS staff invite doctoral-level students to submit proposals to conduct a research study under the direction of a faculty sponsor from their institution. Applicants must be enrolled in a doctoral-level program in educational measurement, statistics, computer science, evaluation, or a closely related field.

Submission of a proposal includes the application and a 2,000-word full proposal. The application will include two elements.

1. A brief cover letter expressing interest in the fellowship and providing the following information:
   - graduate-level courses you have completed relevant to your proposal

- professional or academic experiences relevant to your proposal
- available resources that will allow completion of your proposed research (e.g., computing cluster)
- anticipated timeline
- additional information to be considered for your submission

2. A letter from the fellowship faculty advisor acknowledging their familiarity with the proposal, the fellowship requirements, and their willingness to supervise the work.

The full proposal must include a review of the literature highlighting the gap the proposal seeks to fill, proposed research questions (if relevant), methodology (or methods for systematic literature review if applicable), and a conclusion that explains the significance of the work. We specifically seek research addressing the priority areas described below; however, other relevant proposal ideas will also be considered.

- Systematic literature review on the connections between cognitive models of learning and memory and Evidence-Centered Design as a method for test development. What current research findings on formal, organized learning models are relevant to developing assessments using principles of Evidence-Centered Design?

- Machine learning or other types of analyses of response process or log data for operational educational assessment programs. The scope might include exploratory analyses evaluating common process data variables in the Dynamic Learning Maps® (DLM®) population, such as investigating the relationship between students' response time and teacher support and/or the relationship between students' answer-changing frequency and teacher support. The scope might also include an extensive literature review summarizing how response process or log data are used in other operational assessment programs, including important considerations, benefits, and challenges; data analyses using ATLAS data or other data already available to the candidate; or a combination.

- Systematic literature review and proof-of-concept simulation for an adaptive test that uses diagnostic classification modeling, including adaptation between short testlets.

- Evaluation of the impact of missing data and model misfit on estimates of within-year growth for diagnostic models (e.g., using a transition diagnostic classification model).

- Systematic literature review of cognitive complexity models and commonly used taxonomies of cognitive complexity, specifically their relationship with three-dimensional science standards such as the Next Generation Science Standards. The scope might include comparisons among models, adaptations of models for novel applications to complex test constructs, and other research findings that may support domain definition and test development.

- Developing composite measures and/or teacher-level variables on the DLM Teacher Survey. The DLM Consortium administers an annual teacher survey to collect information about student and teacher experiences with the DLM assessment, opportunity to learn, accessibility, and other topics. One survey is administered per

student to be filled out by the teacher to whom the student is assigned in the assessment system, and some of the sections are spiral-assigned such that a random sample of teachers receives different item blocks. The scope of work might include a principal component and/or cluster analysis of teacher-survey data and/or development of teacher-level variables based on responses for multiple students served by the same teacher; exploring ways to impute values to the spiraled item blocks to overcome limitations in the analysis caused by missing data; or exploring multivariate relationships between teacher-survey data and DLM student-performance data.

- Systematic literature review focused on early elementary education (up to third grade) for students with disabilities who have extensive support needs. The scope might relate to common academic challenges, the effectiveness of different instructional practices and/or approaches to early intervention, approaches to formative assessment, or other areas that are likely to differ between this grade band and later grades.

Funding Periods and Deliverables

Applicants will follow the timeline for proposal submissions shown in the table.

Proposal submission timeline	Step
April 4, 2022	▪ Abstract (optional)
April 18, 2022	▪ ATLAS feedback on the abstract
May 20, 2022	▪ Application materials and full proposal
Week of June 20, 2022	▪ Award announced ▪ ATLAS feedback on proposed methods
July 18, 2022	▪ Finalized proposal

Applicants should indicate their preferred funding period. The scope of the proposed work should be commensurate with the funding period.

Funding period	Funding amount	Deliverables and timeline
Fall 2022	$8,000	▪ Funding period begins (08/01/2022) ▪ Monthly progress brief (08/31/2022) ▪ Monthly progress brief (09/30/2022) ▪ Monthly progress brief (10/31/2022) ▪ Final research report and related materials (12/2/2022)
Spring 2023	$8,000	▪ Funding period begins (01/02/2023) ▪ Monthly progress brief (01/31/2023) ▪ Monthly progress brief (02/28/2023) ▪ Monthly progress brief (03/31/2023) ▪ Final research report and related materials (04/28/2023)

Summer 2023	$4,000	▪ Funding period begins (05/15/2023) Monthly progress brief (06/30/2023) ▪ Monthly progress brief (07/31/2023) ▪ Final research report and related materials (08/21/2023)
Fall 2022 and spring 2023	$16,000	▪ Funding period begins (08/01/2022) ▪ Monthly progress brief (08/31/2022) ▪ Monthly progress brief (09/30/2022) ▪ Monthly progress brief (10/31/2022) ▪ Research progress report (12/02/2022) ▪ Monthly progress brief (01/31/2023) ▪ Monthly progress brief (02/28/2023) ▪ Monthly progress brief (03/31/2023) ▪ Final research report and related materials (04/28/2023)
Spring 2023 and summer 2023	$12,000	▪ Funding period begins (01/02/2023) ▪ Monthly progress brief (01/31/2023) ▪ Monthly progress brief (02/28/2023) ▪ Monthly progress brief (03/31/2023) ▪ Research progress report (04/28/2023) ▪ Monthly progress brief (05/31/2023) ▪ Monthly progress brief (06/30/2023) ▪ Final research report and related materials (07/31/2023)

During the fellowship appointment, recipients will submit written monthly briefs at the end of each month to update ATLAS staff on progress toward the research goals. For the one-semester project, recipients will submit a final research report at the conclusion of the appointment. For the two-semester project, students will submit one progress report at the end of the first semester and one final research report at the conclusion of the appointment. ATLAS also requires the delivery of related materials created during the project, such as data analysis scripts, coding protocols, annotated bibliographies, etc., at the conclusion of the appointment.

The amount of funding is determined by the funding period requested and awarded. The scope of the proposal should be broad enough to allow for approximately 15 hours of work per week for the semester

In the fellowship application, applicants should indicate their interest in presenting their final project at a virtual meeting. The presentation is optional and will not influence funding decisions.

If the project created during the fellowship is expected to lead to a conference presentation or publication, ATLAS staff must approve the content before it is submitted for presentation or publication.

Proposal Evaluation

Proposals will be evaluated on the following criteria:
- appropriateness of design
- evidence of procedural quality and feasibility
- applicability to ATLAS work
- demonstrated capacity to conduct the study, including experience conducting similar studies, relevant coursework, or both

ATLAS staff reserve the right to provide directions on submitted proposals before awarding funding. ATLAS staff also reserve the right to reject all proposals that were submitted if the above criteria are not demonstrated. Applicants who submit full proposals will be notified of decisions by the week of **June 20, 2022.**