

ATLAS Research Fellowship for Doctoral Students

May 14, 2021

Accessible Teaching, Learning, and Assessment Systems (ATLAS) at the University of Kansas seeks proposals from doctoral students to conduct research and evaluation projects during spring 2022 in support of our technology-based learning and assessment systems. Doctoral students from accredited US-based institutions are eligible to apply. Recipients will receive financial support and access to the data needed to complete projects (may not be applicable to all projects; see scope of work below). Projects are to be completed within four months and require a final written report. Applicants are encouraged to submit a 500-word project abstract and attached application due by **July 30, 2021**. Abstracts are not required, but applicants may benefit from submitting an abstract to obtain feedback on the proposal, which may strengthen its likelihood of getting funded. Full proposals are due by **August 27, 2021** to atlas-aii@ku.edu.

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' projects can be found on the ATLAS website (<http://atlas.ku.edu/>).

Scope of Work

ATLAS staff invite doctoral-level students to submit proposals to conduct a research or evaluation 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. Interested applicants must submit a 500-word project abstract and the attached application (which includes instructions for including a cover letter and a letter from the fellowship faculty advisor). The abstract should include: the purpose of the research and research questions, an overview of proposed methodology, and a description of potential implications of the research for ATLAS.

Selected applicants will be invited to submit a full 2,000-word proposal based on their initial submission. The full proposal must include the following: a review of the literature highlighting the gap this proposal seeks to fill, proposed research questions (if relevant), methodology (or methods for systematic literature review if applicable), and a conclusion section that explains the significance of the work. We specifically seek research addressing the priority areas 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?
- Data Forensics – Use of click-history and response changes during assessment to identify aberrant behaviors for students participating in an alternate assessment at the individual and aggregated levels (e.g., classroom, school, district, etc.) for assessments administering a series of short 3-5 item testlets (i.e., no fixed form).
- Psychometric Modeling – How to best summarize performance across a set of 30–100 dichotomous skills (e.g., summing mastered skills, higher-order latent trait model, etc.). This should include skill structures such as a nested hierarchy in which, for example, 30 total mathematics skills might be broken down into 6 groups of 5 skills, where each group of 5 represents a specific content standard.
- Psychometric Modeling – Using ROC curves to assess model fit for diagnostic classification models.
- Machine learning or analysis of response process or log data for operational educational assessment programs. The scope could include an extensive literature review summarizing how this type of data is used in other operational assessment programs including important considerations, benefits and challenges; data analysis using ATLAS data or other data already available to the candidate, or a combination.
- Systematic literature review and proof of concept simulation for adaptation for diagnostic assessment systems, including adaptation between short testlets.
- Systematic literature review and proof of concept simulation for evaluating within-year growth for diagnostic assessments, including assessment design and necessary conditions to support claims of summative assessment using a through-course model.
- Systematic literature review and proposed guidelines for addressing test development using principles of Universal Design for Learning for science multi-dimensional NGSS.

Interested individuals are encouraged to submit a project abstract and application materials to atlas-aai@ku.edu by **July 30, 2021**. Individuals must send the full proposal to atlas-aai@ku.edu by **August 27, 2021**. Applicants may send questions about the fellowship program, priority areas, or other topics to this same email account.

Deliverables

During the fellowship appointment, written monthly briefs will be submitted at the end of each month to update project staff on progress towards the research goals. A final research report will be submitted at the conclusion of the appointment. ATLAS staff may also request delivery of other materials created during the project, such as data analysis scripts, coding protocols, annotated bibliographies, etc. Fellowship recipients may have opportunities to pursue conference presentations and/or publications related to their work, at the discretion of ATLAS staff.

Date	Step/Deliverable
Week of	Award announced
11/29/2021	ATLAS provides feedback on proposed methods
12/17/2021	Methods finalized
01/03/2022	Funding period begins
01/31/2022*	Monthly progress brief due
02/28/2022	Monthly progress brief due
03/31/2022	Monthly progress brief due
04/30/2022	Final research report due

*Negotiable, depending on when the college or university begins the spring semester.

Funding

Funding support for a single semester in the amount of \$8,000 will be provided to selected individuals for a fellowship appointment beginning January 3, 2022. The scope of the proposal should be broad enough to allow for approximately 15 hours of work per week for the semester. Applicants should further demonstrate that they have the resources necessary to complete the study in their submission materials (e.g., access to computing cluster). Applicants may apply for support for follow-up studies upon successful completion of earlier projects. The faculty sponsor will receive funding in the amount of \$2000.

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 direction on submitted proposals prior to awarding funding. ATLAS staff also reserve the right to reject all proposals that were submitted if above criteria are not demonstrated. Applicants who submit full proposals will be notified of decisions by the week of **November 29, 2021**.