Call for Proposals

Research and Innovation Grants in Educational Technologies (2023/2024)

KENET's Research and Innovation Grants Overview

KENET has as one of its mandates, the role of catalyzing collaboration in research and education among member universities and research institutions. KENET promotes collaboration through facilitation of Special Interest Groups (SIGs) in priority academic areas, discovery of active researchers/faculty, provision of research and innovation grants to researchers and member institutions, as well as travel grants for faculty and/or graduate students in SIG areas.

This Call for Proposals for the Educational Technologies (EdTech) Innovation Grants is intended to support faculty to explore innovative ways of leveraging Generative Artificial Intelligence (GenAI) in teaching and learning. These Innovation grants target faculty who appreciate the disruption that Generative AI is having and will continue to have on teaching and learning practices and are eager to not only explore opportunities to harness this new technology to improve learning and teaching practices within higher education institutions, but are also driven to generate new knowledge on best practice for integrating Generative AI in university courses, that can be adopted by member institutions.

Through this round of funding, KENET seeks to not only support individual teams, but to facilitate institutional collaboration and formation of communities of practice in the area of focus, leading to practical knowledge and experience sharing on how best to leverage Generative AI to enhance educational experiences and outcomes within member institutions.

EdTech Research and Innovation Grant: Areas of Focus

The area of focus for this round of funding is: **Innovative use-cases for applying Generative AI in teaching and learning.**

EdTech Research and Innovation Grant: Technical Overview, Structure and Schedule

Research and Innovation Grant Structure

1. Three (3) Research and Innovation grants will be awarded for the 2023/2024 round of funding.
2. Each Research and Innovation grant will be for a maximum of 1.5M KES.
3. The grant period is 12 months.

Area of Focus: Technical Overview

Generative AI application in teaching and learning of computer science, engineering and materials science University courses

In the recent past, generative Artificial Intelligence (GenAI) which focuses on automatic generation of content - text, images, audio and video including synthetic data, has gained prominence within the AI field, with several tools demonstrating astounding capabilities. Large Language Models (LLMs) such as OpenAI's *GPT4*, Google's *LaMDA* and many others have attained unprecedented success in various industries, and current predictions are that they will continue to disrupt many more, including the education ecosystem.

LLMs have already made an impact in the coding space with tools such as Amazon's *CodeWhisperer* and Microsoft's *GitHub Co-Pilot* among others having the ability to perform coding tasks that were previously done by human coders. These tools currently have the ability to automatically generate code snippets or full functions based on human language prompts or existing code comments, perform software testing by creating software tests and identifying bugs, detect hard-to-find software vulnerabilities and suggest code to address such vulnerabilities, as well as perform code optimization by recommending code modifications to boost performance. In Engineering, GenAI tools have been used for design optimization, enhancing the scope and diversity of simulation and analysis using synthetic data, as well as supporting quick turn-around prototyping options. In the field of computational modelling and materials science, GenAI has been leveraged to support the design of new materials as well as to accelerate the discovery of new materials, using innovative inverse design approaches. It is clear that GenAI will continue to disrupt STEM fields and consequently, the training strategies in these fields need to adapt to reflect this reality. These examples are just a tip of the iceberg and there are numerous unexploited opportunities to enhance productivity in STEM fields by leveraging GenAI.

By recognizing that today's students will graduate into a world where AI technologies will have more power and prevalence, educators and learning institutions must purpose to equip STEM students with the requisite knowledge, skills and mindsets to function and succeed in an environment where AI continues to play a significant role in the design and implementation of products and services. Embracing AI early on in their learning journey is therefore essential to ensure academic and future career success. This call is therefore anchored on the recognition of the enormous potential that Generative AI has to revolutionize learning and teaching by creating engaging, interactive and personalized learning experiences to help foster attainment of expected knowledge, skills and competencies in students.

With this call, we seek to support university faculty to identify and pilot innovative use cases that explore the **adoption and application of Generative AI in enhancing the teaching and learning of computing, engineering and materials science courses**. We require that the integration of Generative AI be demonstrated in a live pilot for an actual university course on offer at a given

institution, and the live pilot should run through a full semester or a full academic year. The pilot should provide learnings and insights related to what works and what doesn't, what ethical considerations and implementation challenges exist and how these can be best addressed to support successful adoption, and how best to shift mindsets of both faculty and students with a view to positively harnessing the potential of generative AI to improve teaching and learning of technical skills. We seek pilots that will comprehensively address any, some or all of the following guiding questions, noting that this list is not exhaustive:

- How might we best leverage GenAI to improve and shorten the acquisition of technical skills?
- How might we best leverage GenAI to enhance the (automated) assessment of technical (and associated) skills?
- How might we best leverage GenAI to provide real-time, personalized feedback to support learning?
- How might we leverage GenAI to support virtual tutors to deliver technical training at scale?
- How might we best integrate GenAI in teaching and learning while at the same time strengthen the acquisition and deepening of interdisciplinary knowledge inquiry and application, higher-order thinking, critical thinking and problem-solving skills by students?

Schedule:

Following is the research and innovation grant's call timeline.

Activity	Dates
Call for proposals open for submissions	7th November 2023 to 24th November 2023
Review and evaluation of received proposals	25th November 2023 to 1st December 2023
Face-to-face presentations of shortlisted applicants	First week of December 2023
Finalists announced and research and innovation grants awarded	By end of December 2023
Grantees on-boarding	January 2024
Implementation period	January 2024 to December 2024
Evaluation, reporting and close-out	December 2024

EdTech Research and Innovation Grant: Eligibility, Terms and Conditions

Eligibility

This call is open to full-time faculty at any of the KENET member institutions. Applicants must be PhD holders who are actively involved in teaching a computer science, engineering or materials science course that focuses on acquisition of technical skills and competencies. Further, the course of interest must be offered and have active students enrolled during the grant period.

Team Composition

The lead innovator(s) must be a PhD holder meeting the eligibility criteria above. The lead innovator is at liberty to incorporate other members into the team as needed. If other members are incorporated into the team, then the roles and extent of involvement of these team members must be clearly spelt out. A Letter of Commitment from each Team Member with support from respective Heads of Department or Deans, must be included as part of the team's submission documents. In this letter, each organization or individual must submit in writing, their commitment to participate in project activities, specifying their exact role in the project. Teams with multidisciplinary backgrounds are encouraged. The lead innovator will serve as the team leader and the primary point of contact for the team on all matters related to implementation of the grant.

Intellectual Property

Intellectual property derived from the funded R&D activities will be appropriated and protected based on the lead researcher's institution's IP policy and procedures.

Post-Award Requirements

The successful grantees will be expected to:

1. Provide quarterly progress reports to the appropriate research associate at KENET
2. Participate and present project work at selected meet-ups organized by KENET
3. Grow a community of practice in the area, by reaching out to other local faculty working in the area and other related multidisciplinary domains
4. Actively seek post EduTech innovation grant funding to further their Edtech research and/or innovation work by writing (joint) funding proposals
5. Prepare a final project report at the end of the grant period and submit to KENET. Prepare an abridged version of the project report for profiling on KENET's and institutional websites.
6. Publish paper(s) on their work in reputable journals.

EdTech Research and Innovation Grant: Proposal Submission

Concept Note Format
1. The concept note should not exceed 3 pages (12pt, single spacing, excluding appendices)
2. The concept note should be submitted in PDF format

3. The learning area which is targeted by the innovator should be clearly indicated in the title page i.e. Computer Science, Engineering or Materials Science.
4. No personal identification (names) or institutional affiliation should be included in the concept note.

Concept Note Structure

The concept note should have the following structure:

1. Title
2. Teaching/Learning Problem to be addressed with the integration of Generative AI into the course, and justification for the same.
3. Identification and justification of an innovative use case to address the identified problem, noting any ethical and/or administrative considerations to be addressed.
4. Design and implementation plan for a semester or year-long pilot of the identified use case, defining clearly, the monitoring performance/evaluation metrics and evaluation strategy to be used to evaluate the pilot, in line with the identified problem.
5. Resources (human, hardware, software etc.)
6. Work plan (not exceeding 12 months in duration)
7. Detailed Budget (not exceeding 1.5M KES); We strongly encourage the use of KENET cloud services rather than budgeting for hardware purchases.
8. Appendices

Supporting Documents

The following documents should be included as part of the concept note submission:

1. Team profile document, indicating the names, institutional affiliation and brief biographies of the lead innovator(s). Details of other team members and any collaborating institutions should also be included in the team profile.
2. CVs of the lead innovator(s), clearly profiling teaching and any research activities undertaken with respect to the pilot course and/or innovation problem to date as well as relevant publications.
3. Letters of Commitment from team members and any collaborating institutions.

Concept Note Submission.

Concept notes with all supporting documentation should be sent via email to edutechgrants@kenet.or.ke by **24th November 2023**, **5.00PM EAT.**

Enquiries and applicant support

All enquiries and requests for further information related to this call should be addressed to grantsadmin@kenet.or.ke.

EdTech Research and Innovation Grant: Proposal Evaluation

1. KENET will constitute a review panel of experts. Members of the review panel will sign Non-Disclosure Agreements, as well as statements acknowledging that they will make no claim to the intellectual property developed by the grantees.
2. The reviewers will review all received applications as per the evaluation criteria provided in Table 2 below, and select the top 6 proposals.
3. These top six (6) finalists will be invited for a final face-to-face presentation. During the oral presentations, the applicants will respond to and clarify any questions from the panel that will have arisen out of their written submissions. They will also be required to respond to any ad-hoc questions arising from the oral presentation.
4. After the oral presentations, the reviewers will make their final decisions on which three proposals will receive the EdTech Innovation Grant. Four (4) teams will be selected.
5. Selected grantees will be notified formally and profiled on KENET's website.

Table 2: Evaluation Criteria

Evaluation Criteria	Evaluation Aspects	Weighted Score
Relevance and justification of proposed innovation challenge	Does the proposed problem and innovation challenge represent a generic problem affecting the teaching and learning of technical skills? Does generative AI present an innovative solution to the problem? Is it an important problem to solve in a developing world context? Is there sufficient uptake and utilization potential for the proposed pilot outputs?	20%
Pilot design, implementation plan and evaluation framework	Is the pilot concept innovative and effective? Does it have the potential to disrupt current practices and approaches and provide new knowledge on mainstreaming generative AI in teaching and learning? Does it have transformative potential? Is it feasible? Is it viable? Is it sustainable? Is the proposed implementation methodology technically sound, adheres to best practice and appropriate for the local context? Has it been optimized for efficiency? Is the proposed work doable given the time and budgetary constraints of the Innovation Grant, considering the team's composition? Are the course structure, skills and competencies to be learned using GAI, student and faculty roles and activities, delivery strategy clearly spelt out?	35%

Viability assessment and Scaling potential	Is Scale built into the solution? Can it be replicated in similar contexts? Is the solution viable given the operational context? Is there scope for furthering the innovation idea to other learning domains? Is there scope for future external funding in order to scale-up the learnings from the pilot?	15%
Human capacity	Does the team have the required expertise and experience to deliver? Do they have departmental (administrative) support?	10%
Awareness of and strategies to address/comply with ethical and administrative requirements	Have appropriate strategies to address ethical and administrative requirements been addressed ensuring that the pilot will do no harm to participating students?	15%
Potential for publication in refereed journals and/or conferences or as a White Paper	Are the results likely to be published in reputable journals? Are the results likely to generate a high quality white paper?	5%