How to get your paper accepted at T4E 2023?

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EdTech Society is a professional association started in India by individuals who are committed to improve instruction and learning through the use of educational technologies.

EdTech Society members are researchers, developers and practitioners in the field of educational technology.
Bringing together Education, Technology and Community

https://etsociety.org/
T4E - Technology for 4 Education

- Technology for education: Tools to support learning
- Technology of education: Understanding the processes in learning
- Technology in education: Using technology to support learning
- Technology across education: Using technology to enhance access to education

https://etsociety.org/t4e2023/

Has multiple tracks -

1. Research studies
2. Practitioner research
3. Industry research
4. Hands-on Workshop
5. Best Practices - Teaching
6. Products- Tools demo
Resources

https://www.et.iitb.ac.in/products/handbooks

Guidelines and Templates for Planning Conducting and Reporting Research in Educational Technology

A good handbook for researchers in the area of Educational Technology. It highlights the 3 stages of research and the corresponding templates with details per each template including the criteria at each stage.
This session

T4E 2023 - Important Dates

- Abstract submission deadline - July 10th
- Paper submission deadline - July 17th

So, this session is on Reporting your work -
- Look at PWT - paper writing template
To write a research paper - we need to know

1. Whether our work fits in the category of research for that conference
   ○ Maybe some other category, such as teaching best practices or tools demo, is a better fit for our work

1. What do referees expect in our paper
   ○ We need conceptual understanding of what is important to include

1. How to structure our paper
   ○ We need procedural understanding of how much to write about what part of our work
Part 1 - Is my work ET research?
In my course I explain the importance of the topic prior to teaching. I also explain its practical applications and its usefulness and linkage to the industry. I use PPT presentation and white board equally for an effective lecture delivery. This method will make the lecture clear to students. My idea is working because I can read the happiness on students’ faces.

Ans: No
1. Why not?

Compilation of obvious or known solutions is NOT a research paper; A report of the strategy that you implemented is NOT a research paper; even though the idea may have value as an effective teaching strategy.

To be considered as an acceptable research paper:
you need details that show why your strategy is unique;
you need to establish evidence that the idea works.
I prepared interactive multimedia content and animated videos. Using Moodle LMS, the student can access the content in order to make interactive session. Animated videos will be persisted in their mind. The concept will be easily understandable. Students said that they liked the course.

Ans: Not yet
Use of an ET tool in a routine manner is NOT a research paper. You need to implement an innovative method of using the tool to achieve a teaching-learning goal.

Mere development of instructional material is NOT a research paper, even if the material is based on an innovative idea. You need to show that the material has resulted in improvement in student learning or engagement, beyond saying ‘students liked it’.

2. What more is required?
3. Is this a research paper?

I developed an App to answer students’ doubts. Students can post their queries, respond to other students and get clarification from the instructor. My App is developed in Python and integrates ChatGPT. Students said that they found the App useful.

Ans: Almost
Simply reporting the development of an App is NOT a research paper. You need to establish that your App is required, i.e., a similar App does not already exist for the same goal, or that your App is an ‘improvement’.

In all these examples, after you have established that your idea is novel and not already known, you need to do a carefully designed study with appropriate use of research methods to support your stated results.
Think about the work that you want to submit to T4E 2023

Choose your option: Does your work qualify as research? Yes / No.

1. Yes, my work may be a research paper.
   ○ I have implemented a novel idea and have done a careful study to show its effectiveness for the chosen goal.

2. No, my work does not look like a research paper now.
   ○ I am missing some pieces that may be required for it to qualify as research
What now?

If you chose **option 1**: Yes, my work may be a research paper.
- Pay careful attention to Part II and Part III of this session.

If you chose **option 2**: No, my work does not look like a research paper.
- Look at the other tracks - Teaching best practices or Tools demo.
- Pay attention to Part II and Part III of this session for writing it up.
- Use the Study planning templates in the Resources to carry out your study and submit a research paper to next T4E.
Part 2 - What do referees expect?
Here is a review of one of my papers

The referee’s job is not to pat you on the back, but to find holes in your paper!

That’s how the rigor in research is maintained.
### T4E review criteria (2018)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall evaluation</td>
<td>Please provide a detailed review, including comments and a justification for your scores. This review will be sent to the authors. This field is required.</td>
<td>Reject/ Weak reject/ Borderline/ Weak accept/ Accept</td>
</tr>
<tr>
<td>Relevance</td>
<td>How relevant is the submitted paper with respect to the conference themes?</td>
<td>Very poor / Poor/ Fair / Good/ Excellent</td>
</tr>
<tr>
<td>Originality</td>
<td>How original or distinctive would you rate the work?</td>
<td>Very poor / Poor/ Fair / Good/ Excellent</td>
</tr>
<tr>
<td>Positioning of research</td>
<td>Is the paper situated in an appropriate research context? Does it contain suitable references? Is the work in the paper analyzed in relation to prior work?</td>
<td>Very poor / Poor/ Fair / Good/ Excellent</td>
</tr>
<tr>
<td>Research significance</td>
<td>How significant is the research contribution?</td>
<td>Very poor / Poor/ Fair / Good/ Excellent</td>
</tr>
<tr>
<td>Technical quality</td>
<td>Are the methodologies/ procedures/ experiments sound?</td>
<td>Very poor / Poor/ Fair / Good/ Excellent</td>
</tr>
<tr>
<td>Form - Organization and readability</td>
<td>Are the arguments made coherently? Is the paper organized logically?</td>
<td>Very poor / Poor/ Fair / Good/ Excellent</td>
</tr>
<tr>
<td>Form - Grammar and style</td>
<td>Are syntax, vocabulary and spelling correct?</td>
<td>Very poor / Poor/ Fair / Good/ Excellent</td>
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# What do referees look for?

<table>
<thead>
<tr>
<th>Referees look for</th>
<th>Your paper must have</th>
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<tbody>
<tr>
<td><strong>Significance/ Relevance</strong></td>
<td>Well-motivated problem that is connected to the conference scope</td>
</tr>
<tr>
<td><strong>Novelty</strong></td>
<td>Analysis of prior work to show that your idea is unique</td>
</tr>
<tr>
<td><strong>Positioning</strong></td>
<td>Analysis to show that your work is required, how your work advances the state of the art</td>
</tr>
<tr>
<td><strong>Soundness of procedure</strong></td>
<td>Steps to show that you have implemented solution carefully</td>
</tr>
<tr>
<td><strong>Evidence to support claim</strong></td>
<td>Data to show that your solution works as claimed</td>
</tr>
<tr>
<td><strong>Overall coherence</strong></td>
<td>Consistency between parts of your paper – treatment should address problem, results should give answer to problem</td>
</tr>
</tbody>
</table>
What is Significance / relevance?

● Relevance
  ○ Does your work really fit what the conference is about?
  ○ Is your work within scope?
    ■ Read the Call for Papers carefully

● Significance
  ○ Does your work add value to the area?
    ■ Argument to show how it is *interesting* or that it challenges or enables different ways of thinking
What exactly is meant by Novelty?

Dictionary: “The quality of being new, unique, original, innovative, or unusual”.

What has to be novel? à At least one of the below:
● Your Problem – Research Question(s).
● Your Solution – Strategy to solve a known problem.
● Your Domain – Adapt a known solution to your context

Can a non-innovative strategy be developed into a research paper?
● Yes, provided it is positioned well (See next slide).
What exactly is Positioning?

Dictionary: “situation/relation with respect to others”.

How to do positioning? → Do both of the below:

1. Have you shown analysis of related prior work to bring out the gaps?
   a. papers that have addressed a problem similar to yours
   b. papers that have a solution approach similar to yours

2. Does your solution address any of the gaps above?

As the novelty of your problem or solution decreases, the accuracy of your positioning must increase!
Explain the relation to related work clearly

<p>| | |</p>
<table>
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<tbody>
<tr>
<td><strong>Awful</strong></td>
<td>The galumphing problem has attracted much attention [3,8,10,18,26,32,37]</td>
</tr>
<tr>
<td><strong>Bad</strong></td>
<td>Smith [36] and Jones [27] worked on galumphing.</td>
</tr>
<tr>
<td><strong>Poor</strong></td>
<td>Smith [36] addressed galumphing by blitzing, whereas Jones [27] took a flitzing approach</td>
</tr>
<tr>
<td><strong>Good</strong></td>
<td>Smith's blitzing approach to galumphing[36] achieved 60% coverage [39]. Jones [27] achieved 80% by flitzing, but only for pointer-free cases [16].</td>
</tr>
<tr>
<td><strong>Better</strong></td>
<td>(Good Above) + We modified the blitzing approach to use the kernel representation of flitzing and achieved 90% coverage while relaxing the restriction so that only cyclic data structures are prohibited.</td>
</tr>
</tbody>
</table>

*Source: Mary Shaw, Writing good Software Engineering Research Papers, ICSE 2003*
What is Soundness of Procedure?

If you have already conducted the study, think about:

● What are your claims regarding your solution (intervention / tool)?
● Do you have results / evidence to back up these claim?
● Could be other reasons for these results, instead of your solution?
  ○ If it is not too late, go back and modify the study to rule out these reasons.
  ○ Else, at least write these reasons in the limitations section of your paper.

If you are yet to conduct the study:

● See the Guidelines mentioned earlier for more details.
What is Evidence to Support Claim?

The data that you gather should be in sync with the goal of your study.

Some common metrics are:

- Learning Effectiveness – student performance
- Engagement – student interest, satisfaction

Learn how to measure these - See the Guidelines mentioned earlier for details. Register for a research methods in ET course

The analysis that you perform on the data should be the evidence that forms the basis of your claims. This should be a large part of your paper.
What is Coherence of work?

**Intro:** Describe the issue or problem that you'll address in a way that a large audience cares about. Set up the contribution (progress) they can expect to learn about by reading and why such progress is needed. Foreshadow how you'll make progress especially if you are taking a new approach to tackle an outstanding challenge. Both generalists and technical readers now should know why they care.

**Lit Review:** Set up the technical context for this work, preparing a reader to make sense of your research question, research design, and your data. If you will use a theory, analytic concern or prior result in the discussion of your research, set it up here. A technical reader (e.g. reviewers and editors) now should know enough about the technical state of the art that you will employ in the Body to understand (and trust) your research approach and how you will contextualize your findings in the Discussion section.

**Body:** Your methods, data, analysis and findings go here. This is the guts of the paper, where you produce the evidence for your claims. Readers expect specifics and details. Jargon or theory usually does appear for the first time in this section. The focus should be on your intended contribution; minimize detours to other “interesting” aspects of your data if they aren’t important to your contribution. Readers should have faith in the soundness of your argument.

**Conclusion:** Recalling the issue in the Intro, explain to your larger audience; how do your findings make a contribution? What’s the advance, in more general terms? To whom does this matter and what can they do with it? What’s the new challenge now within the reach of the community, should they build upon this work? Both generalists and technical readers should now know your advance and why it matters.

**Discussion:** Recalling the technical context as set up in your lit review, interpret your findings. What is new about your findings (relative to lit review)? What’s different or supportive of prior work? What is the strength of your claims? What are limitations or weaknesses? A technical reader should understand how your new findings fit within and move beyond prior technical literature, and the strengths and weaknesses of your argument.

Caveat: Not all great manuscripts have a U shape. Your mileage may vary.
Example 1. How we teach impacts student learning: Peer Instruction vs. Lecture in CS0 (programming course), SIGCSE 2012

We look at the impact on student learning of the pedagogical approach in which a class is taught. We compare two sections of a non-majors programming course offered in the same term, by the same instructor, covering the same content and utilizing the same book, labs and exams. One section was taught using standard lecture practices including lecture from slides, live coding and weekly quizzes. The other section was taught using the Peer Instruction (PI) method that actively engages students in constructing their own learning, instead of absorbing understanding from the instructor’s explanations. Using a factorial analysis of variance, we find that students in the Peer Instruction section score an average 5.7% higher than in the standard lecture practices section in the final exam.
Example 2. Improvement of Mental Rotation Ability using Blender 3-D, T4E 2012

Mental Rotation (MR) ability is important in various fields ranging from art and education to engineering and technology. MR ability can be improved by computer based training. Most existing techniques require weeks of training and are based on proprietary software. We developed a three-hour training module using Blender, an open source software. In this paper, we present experimental details of the effect of our training on the improvement of MR ability. Our sample was 42 first year engineering undergraduate students and we used Vandenberg's Mental Rotation Test for pretest and post-test. We found the results to be significant, leading to a large effect size for the entire sample. We also found that females and low achievers are more likely to benefit by such training.
How do I ensure that my research meets the referee’s criteria?

Use the [Resources](#) mentioned earlier.

1. Idea Proposal Template (IPT) - helps you explore if your idea is suitable for a research study.
2. Study Planning Template (SPT) - helps you plan the research study around your idea.
3. Paper Planning Template (PPT) – helps you plan the flow and ideas that will go into your paper.
4. Paper Writing Template (PWT) – helps you plan the paragraphs that will go into your paper.
Part 3 - How to structure the paper?
Write the Abstract - Convey the idea

Here is a problem – 1 line
It’s an interesting problem - 1 line
[Here’s how other people have approached it, yet …] - 1 line
It’s an unsolved problem – 1 line
Here is my idea – 1-2 lines
Here’s why my idea works (details, data) - 1-2 lines
This is my key contribution - 1 line

[adapted from slides by Simon Peyton Jones:
Slides -https://studylib.net/doc/14197956/how-to-write-a-great-research-paper-simon-peyton-jones-mi... ]
Write the Introduction - expand the abstract

Here is a problem, It’s an interesting problem – 1 para
Here’s how other people have approached it; yet it’s an unsolved problem - 1 para
Here is my idea and briefly why it works – 1 para
This is my key contribution - 1 para
Write the paper

First write a short paper (~4 pages)

● Expand the introduction - each para to a section
● Plan your real-estate -
  ○ how much space for each section?
  ○ Draw boxes on a sheet of paper and give section headings

Then, write the full paper, if you still have more to say

● It may be easier to expand sections rather than reducing page length after writing everything
Proportion for each section
Assuming 8-pages

- Introduction (1 page)
- Related Work and Positioning (1 page)
- Your solution and Implementation (2 pages)
- Research method (1.5 pages)
- Results (1.5 pages)
- Discussion and Conclusion (1 page)
Conclusion
Which template to use at what stage?

![Diagram showing research stages and templates](image)
Quick reference version of resources

1. Go to my webpage - Google - Sridhar Iyer, IIT Bombay

1. Click on Papers -
2. Read - Guidelines and Templates for Planning, Conducting and Reporting Educational Technology Research

1. Click on Talks -
2. Go through - Tutorial: Guidelines for Planning, Conducting and Reporting ET Research
Bringing together Education, Technology and Community

https://etsociety.org/