FROM RESEARCH-LED TEACHING TO RESEARCH-LED LEARNING: EDUCATION FOR AN UNKNOWN FUTURE

Emeritus Professor Angela Brew,
Macquarie University
Chair of ACUR

Undergraduate Discovers New Firefly Species

UC Riverside's Joshua Oliva found the firefly near Topanga, Calif.

By Iqbal Pittalwala On JUNE 24, 2015

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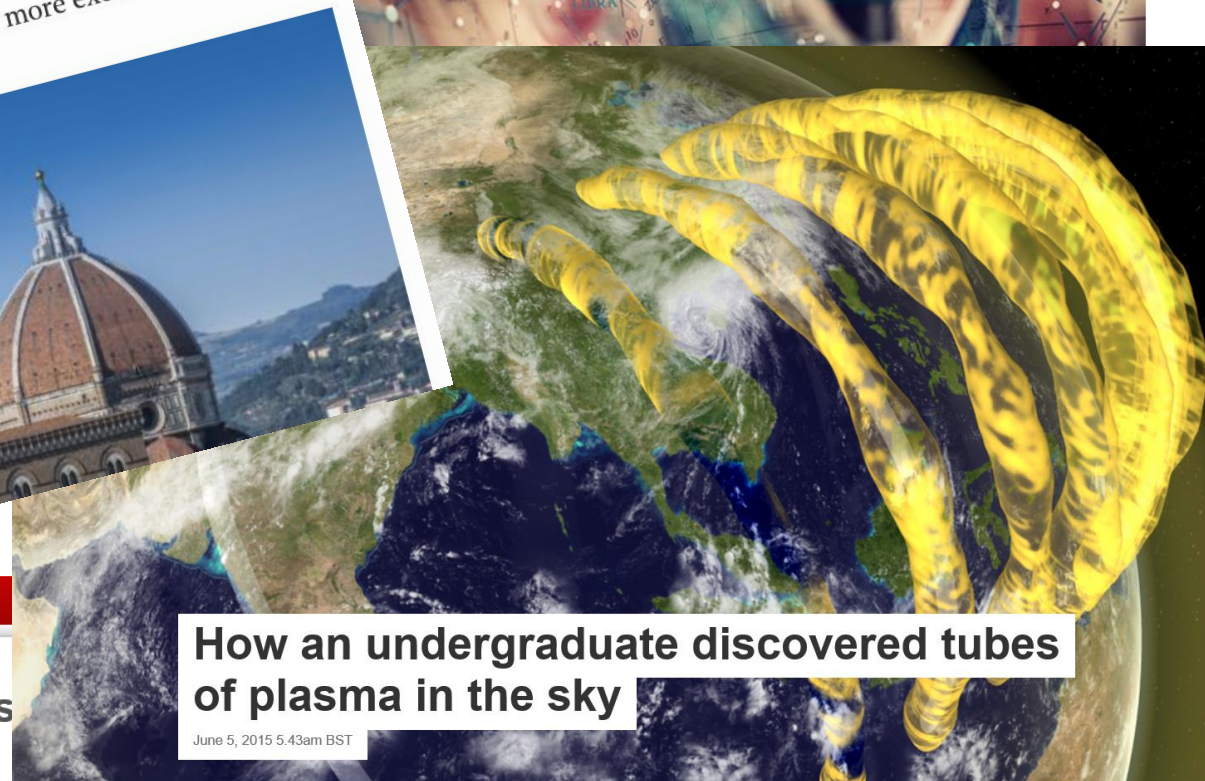
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How an undergraduate discovered tubes of plasma in the sky

June 5, 2015 5.43am BST

Rising voices:

young people fight for climate action

Are you preparing students for this world of complexity and ambiguity?

Academics' definitions of undergraduate research
(Brew & Mantai, 2017)

Span	Everything all students do	vs	A specialised process only for a few students
Guidance	Guided research (groups or individually)	vs	Independent research (groups or individually)
Process	Involvement in stages of research separately e.g. data collection	vs	Involvement in complete research process e.g. questions to write up and presentation
Focus	developing skills (doing)	vs	developing the student (being)
Quality	UGR is secondary, lower quality research – not publishable	vs	UGR is original publishable research generating new knowledge
Identity	Students' identities as researchers are limited to the degree and student cohort	vs	Undergraduate researchers treated as members of the research community and as future researchers.

UNDERGRADUATE LEARNING: Insufficient Undergraduate Research Development	ATOMISTIC UNDERGRADUATE RESEARCH DEVELOPMENT: Some recognition of need to develop undergraduate research skills but practice is patchy and coordination across programs requires more work			WHOLISTIC UNDERGRADUATE RESEARCH: Some good recognition of the need for coordinated development and integration of students into the scholarly community.	
0. Individual work	1. Individual uncoordinated skills development	2. individual & group coordinated skills development	3. Research-based scholarly experience/tasters	4. Scholarly practice within courses	5. Integration into the scholarly community
Within courses	Within courses	Within courses	Co-curricular engagement	Within courses	Co-curricular engagement
Students are treated as an audience for research. They may attend lectures on research methodology and are assessed through essays and/or reports.	Essays and reports are framed as research. Individual research techniques are practiced, e.g. bibliographical exercises, laboratory techniques, field work, etc.	Research techniques are combined and scaffolded through the curriculum. Specific techniques are practiced on unconnected topics.	Students work as research assistants, in internships or voluntarily on existing research projects alongside researchers.	Through a program based approach to course design, research skills and experiences are coordinated so students engage in whole research process.	Funded by scholarships, or internships, students work alongside researchers on individually tailored and owned projects engaging in whole research process from question setting to publishing.
Students develop basic student competency but are largely unaware of research and research opportunities.	Students develop academic skills, knowledge of some techniques but research in the university is unconnected and they are unaware of research and opportunities.	Students develop research techniques but lack understanding of relationship to chosen profession.	Students are introduced to research life and practices. May be paid a stipend or salary or may gain academic credit.	Students develop a disciplinary professional tool kit with a clear sense of the research process. They practise skills in a coordinated manner and know how research relates to profession.	Students are fully integrated into the scholarly community and treated as equal with academics. They know how their research furthers the discipline. May gain a stipend or academic credit.

Thank you

Thanks to Cybele Malinowski for permission to use Rising Voices: Young people fight for climate action.

References

Brew, A., & Mantai, L. (2017). Academics' perceptions of the challenges and barriers to implementing research-based experiences for undergraduates. *Teaching in Higher Education*. 22:5, 551-568.

See also:

Brew, A. (2013). Understanding the scope of undergraduate research: A framework for curricular and pedagogical decision-making. *Higher Education*. 66 (5) 603–618.