

Educats: A Community of Practice

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SESSION C1: Integration of theory and practice in the learning and teaching process

CONTEXT A STEM education community of practice (CoP) – Educats - has been established at a large university in Australia. This small, local CoP is comprised of postgraduate students, postdoctoral and professional staff in the Faculty of Engineering and Faculty of Information Technology. Wenger (2011) defines CoPs as “groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly”. The shared passion in Educats is better teaching and better learning of STEM subjects in higher education, particularly concerning constructively aligned, outcomes-based education. This paper details the conception and development of this CoP, and addresses the implications on research; teaching practice; pedagogy and identity.

PURPOSE This paper describes the structure of Educats, the activities and achievements thus far and the implications on professional identity, research, teaching practice and personal well-being.

APPROACH Educats is a self-organised CoP comprising of education-focused early-career researchers from STEM disciplines. Members regularly participate in professional development events and social activities. In a semi-structured interview, members reflected on their involvement in the CoP and the influence that their involvement has had on their development and progression as early-career researchers.

RESULTS All Educats members reported individual benefits to their research, teaching, and professional development or personal well-being. Members have improved in research skills as a result of participation in external professional development activities such as training programs and conferences. Other members have initiated their education research and education-focused career path as a result of their involvement and through the support exchanged within the community. Nearly all members reported that their involvement with Educats has benefited their personal mental and physical well-being. Educats has attracted great interest from non-early-career academics and senior university staff with its contributions to teaching and learning becoming increasingly evident within the institution.

CONCLUSIONS The experiences and achievements shared by Educats members thus far demonstrate that a small, local non-hierarchical and self-organised CoP can offer immense individual benefits and significant contributions to teaching and education research in higher education. Additionally, such a CoP has proven to be a great social and support platform for early-career educational researchers.

KEYWORDS Community of practice; early-career researchers; scholarship of learning and teaching; professional identity

Introduction

A community of practice (CoP) – Educats - has been established at a large university in Australia. At time of writing, this small, local CoP is comprised of postgraduate, postdoctoral and professional staff from STEM disciplines. The purpose of Educats is to support its members in their development as early-career researchers (ECRs) and educators through social interaction, discourse, group reflection and practice in pedagogy. Educats is self-organised, non-hierarchical and cross-disciplinary, with social interaction being the significant motivation for involvement and active participation in activities. All members demonstrate individual expertise in educational areas such as blended learning and reflective practice and combine their expertise to drive evidence-based teaching practices in STEM education. The mission of Educats is twofold: the first being continuous improvement in teaching practices that aim to have a positive impact on student learning, the second being outputs in educational research and scholarship of teaching and learning, with dissemination of research outcomes that make a societal contribution in STEM education.

This paper describes the formation and structure of Educats, the activities and achievements thus far and the implications on professional identity, research, teaching practice and personal well-being. The research question at hand is: what are the implications of membership in a CoP on the teaching; research; professional development and personal well-being of ECRs?

Context

Educats was initially formed as a hub for education-focused postgraduate students in Engineering to support each other in their research. Since then, it has evolved to include undergraduate (adjunct), postdoctoral, early-career academic and professional staff across two faculties (engineering and information technology). A strong bond was established amongst members from their shared appreciation for cats, gifs and memes. The name Educats is thus derived from a combination of the words 'education' and 'cats'. Undergraduate student adjunct members of the group are called 'Edukittens'. ECRs wishing to join the CoP do so via personal invitation by an existing member. The candidate undergoes a vetting process in which existing members check the candidate's professional profile (LinkedIn), social networks (Facebook) and relevant experience or expertise (teaching and research) for alignment with the CoP. Potential members are identified from the combined social and professional networks of existing members.

Communications

The primary medium of communication among Educats is Slack, a social and team management platform (Slack, 2017). At the time of writing, there are six chat channels to streamline communications (Table 1) on specific topics such as professional development events or conferences. Slack is the main platform through which weekly lunches are organised and is additionally a space for social interaction among members.

Professional Development Activities

Educats members attend a variety of professional development activities as a group. These professional development activities expose members to current and best practices in teaching and research and help members to develop their teaching practice and research skills. Three existing members are currently participating in an eighteen-month long training program for higher education research organised centrally (non-faculty specific) by the university - the Higher Education Research (HER) Program. Members have attended training workshops for questionnaire design (research); peer evaluation (teaching) and events for networking and sharing of pedagogical best practices. Attendance at educational conferences is particularly important within Educats. Conferences attended at time of writing include: the 2017 Learning and Teaching Conference at our university and the 2017 Australian Conference on Science and Mathematics Education (ACSME, 2017). Members have also attended externally

facilitated education-focused events, these included seminars on: the current status of learning analytics; motivation, commitment and wellbeing in secondary teaching; and developing education research practices at the faculty level. Two members attended a week-long winter school on education research facilitated by the Australasian Association for Engineering Education (AAEE). The significance and impact of these activities is discussed later.

Table 1: List and description of the Educats' Slack channels

Channel Name	Description
# aae	Preparations, discussions and updates relating to the upcoming AAEE conference
# askacat	Help/feedback/advice from members about teaching practices, pedagogies and student experience
# events	Information on upcoming seminars; workshops; training courses; conferences and other education-focused events on and off campus
# general	Discussions, articles, other multimedia relevant to education research and practice
# random	Weekly lunch communications; meme sharing; chit chat
# ratherbehere	Travel and holiday photos from Educats members - places we'd all rather be than at our desks!

Event Organisation

A primary function of Educats is to organise and facilitate professional development events for the CoP and the wider academic community, both as individuals and as a group. The development and delivery of these events contribute to members' professional development and faculty service. One member of Educats has developed and delivered comprehensive training modules on implementing a formal peer evaluation system. Two members worked together to develop and deliver a training module on aligning assessment with learning outcomes (the latest in a series on constructive alignment for outcomes-based education). These training modules are recognised by the central university staff development unit and count towards the professional development employment requirements for all staff members.

Teaching and Pedagogy

There is diversity in discipline, teaching experience and pedagogy expertise within Educats; this enables members to take advantage of each other's strengths to collaborate by developing teaching practices, educational technology and enhancing pedagogies. The range of disciplines and backgrounds of Educats members include: educational design; aerospace; chemical; electrical and mechanical engineering; and computer science. The various teaching roles and experience of Educats members include: tertiary teaching associate (TA) (2-7 years); lecturer (1-2 years); teaching support leader (3 years); non-tertiary teaching (4-7 years) and research supervisor (1-3 years). The fields of pedagogy expertise within Educats include:

- learning management systems
- teaching/learning content development
- professional accreditation
- assessment and evaluation
- constructive alignment (Biggs and Tang, 2011)
- undergraduate critical thinking development
- active learning
- note taking
- flipped classroom
- curriculum design
- audience response systems (ARS)
- student engagement
- teamwork
- peer evaluation

The diversity in discipline, teaching experience and pedagogy expertise provides an environment in which members exchange knowledge and skills that ultimately enhance the quality of teaching and learning at the university.

Research

All Educats members undertake education research projects - either for their postgraduate studies or for their academic career development. The CoP enables members to support each other in their individual education research and also facilitates collaboration among the group. Members discuss aspects of their research through Slack and during weekly lunch meetings. Examples of discussion topics are: education theories; epistemology; data collection methods and data analysis techniques. The researchers regularly meet to collaborate on research projects. These include: writing conference papers; developing educational technology; developing methodology and delegation of research tasks such as data collection and analysis. Peer review is a significant aspect of the research activities within Educats. Members regularly participate in peer review of other members' academic writing, examples of which include: research proposals; literature reviews; ethics applications; conference papers and grant applications. Members also share within the group knowledge and insight gained from their respective research supervisors and education research mentors. Discourse, collaboration and peer review within the group has enhanced members' quality of education research; this shall be discussed later.

Social Activities

Social activities are an important aspect of engagement within the CoP; these activities provide the foundation upon which members strengthen their sense of belonging in the CoP and build interpersonal relationships with like-minded people. There are two primary social events on the Educats calendar: weekly lunches and end-of-semester (EoS) celebrations. Weekly lunches on campus are a valuable opportunity for members to discuss ongoing teaching and research progress. Not all members attend weekly lunch due to individual teaching and research commitments. In Educats, there are no repercussions for lack of attendance; though in any given week, lunch is attended by at least three members. Examples of lunchtime discussion topics are: conference planning; event planning; faculty and departmental news; active learning teaching practices and classroom anecdotes. Potential members being considered for addition to the CoP are invited to lunch so that existing members can further evaluate whether the candidate will be suitable for the CoP. EoS celebrations (e.g. nacho parties) allow current Educats members and affiliates to unwind, socialise and share personal highlights of the semester. These events allow members to strengthen interpersonal relationships within the CoP; the implications of the social aspect of Educats is discussed later.

Theoretical Perspective

The operations of Educats and the structure of this study is primarily informed by Wenger's (1998) community of practice. Wenger defines CoPs as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly". Educats is aligned with those CoPs within higher education institutions that exist with the purpose of promoting the Scholarship of Teaching and Learning (SoTL) in Engineering Education. Educats identifies with the definition of SoTL as phrased by Mann and Chang (2012) to include three main activities:

1. Engagement with the existing knowledge on teaching and learning.
2. Self-reflection on teaching and learning in one's own discipline (often involving education research).
3. Public sharing of ideas about teaching and learning within the discipline.

CoPs in universities typically focus on specific topics in higher education; examples include blended learning, learning analytics, education research. Members in these CoPs are

generally motivated by the potential for professional development and networking. Educats places stronger emphasis on social support and a sense of belonging to engage its members. Educats members revel in opportunities to interact with each other - people to whom they can relate on a personal (e.g. cryptocurrency and fantasy fiction) as well as professional level. These unconventional aspects about the Educats CoP act as the social bedrock for the group's structure and operations.

Wenger (1998) outlines three structural characteristics of a CoP as Domain, Community and Practice. The Domain is the shared interest to which members commit and the shared competence that distinguishes members from other people. For Educats, the primary domain is pedagogical practice in STEM education, with a sub-domain being the workings of a university including administration, student services and university politics. The Community is the activities, relationships and sharing of ideas and knowledge between its members. In Educats, this is a collection of ECRs and academics who are passionate about creating positive impact in STEM education. The practices are outcomes-based STEM education and education research. It is also the shared resources (experiences, stories, tools, pedagogies) which empower members to succeed in their respective roles as educators and researchers.

Method

All existing Educats members (seven) participated in a semi-structured group interview roughly six months after the CoP was first established. The interview questions prompted members to reflect on how their involvement with Educats has influenced their teaching, research and personal well-being. Members also provided demographic data regarding their roles, teaching and research experience and expertise. The group interview was audio recorded and transcribed, and themes were uncovered according to the categories outlined in the research question. Approval from the university's Human Research Ethics Committee was sought and granted prior to the interviews and consent was obtained from participants (project ID: 10809).

Results and Discussion

Analysis of interview responses revealed the prevailing themes to be: formation and citizenship in the group; implications on education research and teaching practice; professional development; social engagement and personal support. These themes are discussed in the following sub-sections.

Formation and Citizenship

Educats members have developed a strong sense of community and citizenship since its formation. Enthusiasm, participation and engagement in discourse and activities has increased significantly. Those members that were highly enthusiastic at the beginning have remained so, while those who were shy or nonchalant at first now demonstrate strong engagement and interest. One member who described themselves as an introvert said at the beginning: *"I'm just a lurker; don't mind me."*; this member has since helped to develop new capabilities in an audience response system for teaching large classes at the university; this member has also been instrumental in developing the branding of Educats by commissioning the design of a logo for the CoP. When asked about the reason behind the positive shift in interest and engagement, this member shared that it was related to their career aspirations which had shifted from discipline-based engineering research to teaching and education research.

There is a unanimous sentiment that members are glad to be amongst a community of like-minded people who demonstrate a genuine interest in enhancing education at a research-intensive university. Several members highlighted that being able to brainstorm on teaching practices and research projects with others in the community has been highly valuable and beneficial. When asked what the purpose of Educats is, members were unanimous in saying that it is *"having people to bounce ideas off"*; *"having people that you can collaborate on research with"*; moral support; and exchange of knowledge and expertise.

Members were highly appreciative of having a community of people who share their enthusiasm for education and teaching; one member said:

"I can be as passionate about teaching as I want and it would be okay...it was acceptable, whereas I wouldn't have that feeling outside of the group."

Another member likened the group citizenship to that of a technical engineering research group:

"I haven't had this since I worked in a research lab... it's people to have lunch with, it's people to talk to about your work who are at a similar stage of their career to you and who are working on similar issues but not the same problems"

Perhaps the most distinguishing feature of Educats as a CoP is that it rejects any notion of hierarchy and power-difference. This is exemplified in one member's comment:

"there's no power differential in this group, it's a very flat structure. It would be very different if we had senior academics in this group; it may feel like we had to defer to them whereas we can generate our own ideas and not be influenced by what senior people are going to think of us so it's nice to have peers or equals to talk to"

This member also added that Educats

"is not a work group; it is more about everybody contributing equally and bringing something to the table"

The community citizenship provides an inclusive place for members to express their ideas and opinions and learn from one another on equal footing. The absence of a hierarchy and power difference in the community encourages all members to participate and contribute equally.

Influence on Education Research and SoTL

Educats has played a critical role in catalysing education research projects among its members. Members all agreed that they would not have participated in certain events (seminars; workshops and conferences) and programs (AAEE Winter School and HER program) were it not for the encouragement and support from other members. Involvement in Educats has initiated two members' education research and encouraged members to make submissions for the annual AAEE conference. One member felt that the group may not have made as many submissions to this conference without the reciprocating encouragement and support amongst members.

Peer review and regular feedback exchanged within the community has enabled members to develop their education research knowledge and skills. Frequent peer review amongst members have been highly beneficial for ethics applications; questionnaire design; developing data collection methods and general academic writing. Members build upon education research knowledge by regularly contributing to a cloud repository of literature; education jargon; research methods and pedagogies. Knowledge and skill development through peer review, feedback and knowledge transfer have helped members to develop their confidence in education research and to overcome feelings of imposter syndrome.

Raising awareness for SoTL is another purpose of Educats and in doing so the community has gained 'notoriety' amongst various faculties and senior staff at the university. One member stated that the purpose of Educats is *"to share experiences, generate awareness and promote educational technologies and techniques within the university or within the faculty"*. One member that works closely with senior staff informed the group that Educats is known amongst Directors of Teaching, Associate Deans and staff from the Office of the Deputy Vice-Chancellor and Vice-President (Education). This 'notoriety' has helped generate further awareness of the growing significance of teaching and pedagogies in STEM. A reputation within the university will also help Educats to obtain support and funding to enable education research outputs and enhancements in teaching and pedagogies.

Influence on Teaching and Pedagogy

The diversity in discipline, teaching experience and pedagogy expertise has enabled Educats members to exchange feedback, insight and knowledge in their roles as teaching associates, lecturers and supervisors. Consequently, members have been able to improve in specific areas in their roles. There is exchange of feedback and insight between the postgraduate students and members that have research supervision duties. This exchange produces two outcomes: 1) supervisor members learn about effective supervision practices so that they can better understand and cater for the needs of their students and 2) postgraduate members develop an understanding of supervision from the supervisor's perspective which enables them to strengthen relations with their own supervisors. There is exchange of feedback and insight on teaching between members with TA and lecturer roles. One TA in Educats reflected that through discourse and interaction with the lecturers and more experienced TAs, they had gained confidence in approaching the class and students. Another less experienced TA remarked that they had become "*far more aware of diversity in student cohorts*" and that it had helped them to better support the teaching and lecturer in their unit.

Feedback from TAs and lecturers on the use of ARS prompted one member to develop new features in the ARS that they developed as part of their PhD which is used extensively at our university. One member shared with the group that they had implemented another member's recommendations on engaging women in STEM. The member with expertise in female engagement reflected: "*it was great to see someone being so receptive of work that I'd done*". One member reflected that the training modules on teamwork and peer evaluation developed by another member had been very well received by university staff. The training modules have been attended by over 100 educational staff and there has since been an uptake of better pedagogical practices on teamwork and peer evaluation. This was evidenced by a significant increase in the number of users of the peer evaluation system and positive feedback from students.

Influence on Professional Development

Professional development is a core focus for the ECRs who make up Educats. All members reported that they had attended more seminars, workshops and conferences as a collective with other members of Educats and that they were not as likely to have attended these as individuals. Members have shared with the community knowledge and insight gained from participating in professional development activities. This has resulted in a wealth of knowledge and resources on many topics relevant to research, teaching and pedagogy and is shared within the community via Google Drive. These resources are easily accessible to members and enables the community to build upon existing knowledge and learn from others.

Educats is a community which aids the development of members' professional identity. Two members have been inspired to transition from discipline-based technical research to education research and pursue education-focused career paths. This is exemplified by one member's reflection of their transition from lecturing to educational design:

"It's helped me to define my career path a lot more because even though I'm a lecturer and as a PhD student in the past, you would think being a lecturer is like the holy grail. I've actually found that it's not really for me; I don't have the right personality for it and so through the Educats I've learnt that there are other career paths that I can take which embraces my teaching passion and it's actually quite nice to be guided in that sense"

Members have reported that they have found Educats to be a safe and inclusive environment to express themselves as professionals without apprehension of judgement. One member reflected on the sense of validation they felt within Educats:

"It's more a case of finding a group of people who would take my expertise seriously and not talk down to me because occasionally what happens is that academic staff would consider themselves superior even though they're not doing a great job of something that you're trying to teach them to do and it's purely just because of their mode of employment."

These sentiments demonstrate that a local CoP such as Educats can play a significant role in the professional identity and development of ECRs.

Social Support and Personal Well-being

The social support exchanged in Educats has been beneficial to members' personal mental and physical well-being. All members valued the weekly lunches as an opportunity to take a "*mental break*" from their research or teaching. This is exemplified in one comment:

"Without these Thursday lunches it would just be "eat it at your desk" and having a group to come and do that with instead of having your lunch at your desk is probably one of the best things about this group."

When asked how participation in Educats has influenced their personal well-being, nearly all members shared anecdotes on how this CoP has benefited their mental health. Two members highlighted that Educats helped to lessen feelings of isolation in their respective divisions, as exemplified in one member's anecdote of an instance of workplace conflict: "*without Educats... I would have physically been a lot more isolated, I would have been in my office a lot more if it wasn't for you guys*". One member spoke of the support and advice they received from other members regarding a difficult transition between universities and described that support to be very useful, valuable and "*crucial in this transition period*". Another member reflected that they are now better able to confront their emotions in personal issues as exemplified in their comment:

"We've come out of engineering where no one ever talks about their feelings and I feel like this group has really helped me to confront some of that stuff and really grow as an individual, grow more mature and to be able to handle those kind of situations better in my mind."

One member shared that they had been inspired to participate in regular physical activity for health and fitness upon hearing about the fitness regimes of other members in Educats. This member reflected that:

"I find my PhD life is often very stressful. Participating in Educats has given me a valuable resource for help and support. I have spoken to members of the group multiple times about managing stress and finding a healthy life balance. In fact, I now take part in weekly exercise as a result of my conversations with the cats."

These anecdotes demonstrate that participation in a CoP like Educats is beneficial to members' personal mental and physical well-being. Members' positive responses indicate that a CoP that serves both professional and social purposes can empower members to lead a more balanced lifestyle and achieve personal growth. The personal well-being of ECRs is often not the subject of faculty attention despite its significant impact on the quality of teaching and research at universities, as exemplified in the experiences within Educats. Members derive a collective identity and a strong sense of belonging from their involvement in the research, teaching and professional development aspects of the CoP. The social and emotional support exchanged within Educats reinforces and strengthens this collective identity and sense of belonging.

Upcoming Activities

Educats are facilitating the upcoming inaugural Faculty Education Retreat, bringing together education-focused members of staff from across all the departments in the Faculty of Engineering. The group collectively designed activities with set learning outcomes which included round-table skill-sharing sessions, Lego ideation, and the development of a grass-roots plan to achieve the faculty's strategic goals for learning and teaching.

Conclusions

A collaborative, non-hierarchical, self-organised community of practice has been established for education-focused ECRs. This community focuses on development of members' education

research; teaching, pedagogies and professional identity. This is achieved through participation, development and delivery of professional and social events. Involvement in this community has provided members with a professional and social identity and a strong sense of belonging. This is reflected in new research outputs; new collaboration in teaching and pedagogy; continuous professional development and improved personal well-being. A CoP like Educats is recommended for ECRs to support their professional and personal development. A sense of locality, proximity and social rapport is recommended for such a CoP. Ways in which ECRs can establish their own local CoP include: networking at local conferences; education-focused events; local education-focused bodies and postgraduate associations.

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