

January 2021



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Transforming Education
for Sustainable Futures



Co-Creating Education for Sustainable Futures

TESF Methodology Background Paper

Introduction

The aim of this paper is to explain the overall methodological approach and key concepts that inform our work as researchers within the Transforming Education for Sustainable Futures Network Plus. In particular, we will seek to explain what we mean by the idea of 'knowledge co-creation' which underpins our approach and what this means in practical terms for the design and implementation of research projects in the area of education for sustainable futures. In developing the paper, the authors have sought to synthesise existing ideas about knowledge co-creation from across our network. The paper can therefore best be seen as representing an ongoing discussion within the network plus but also as an invitation for others to engage with our work. Thus, whereas this paper is not intended as a step-by-step guide for those interested in completing an application to undertake TESF research, we hope that it can serve as a useful background resource and inspiration for researchers interested in undertaking co-created research in the area of education for sustainable futures.

What is TESF?¹

In order to contextualise our approach to knowledge co-creation, it is important to explain a little about the [Transforming Education for Sustainable Futures](#) (TESF) Network Plus. TESF is an expanding network of researchers funded by the UK Global Challenges Research Fund at £4.75 million for three and a half years (November 2019 - April 2023). We have partners in India, Rwanda, South Africa, Somalia/Somaliland (our countries of research focus) as well as in the UK and the Netherlands. Our aim is to generate new knowledge that can assist education policy makers, institutions, non-governmental and community-based organisations and businesses in our countries of research focus to implement education policies and practices that can contribute to equitable and environmentally sustainable development. We are interested in projects that seek to better understand the role of education and training in supporting:

- the skills and agency of young people and adults for sustainable livelihoods;
- sustainable cities and communities;
- taking action to mitigate the effects of climate change.

We will do this through synthesising existing knowledge but also through using approximately half of our funding to support new 'plus funded' projects in our countries of research focus and led by teams based in these countries. We are particularly interested in research aimed at meeting the needs of historically marginalised groups, including those most affected by poverty, women, youth, indigenous peoples, urban and rural dwellers. A key objective of our work is to [mobilise capacity](#) to undertake existing and future research in the above areas. We will provide ongoing opportunities and support within our hubs in India, Rwanda, South Africa and Somalia/Somaliland for those new to the research process as well as more experienced researchers to develop their research skills.

¹ References are made in this paper to other key background papers that explain additional key concepts (Foundations Paper) ways of working (Capacity Mobilisation Paper) and challenges that are core to TESF's work (Climate Change, Skilling for Sustainable Futures, and Sustainable Cities papers) as you consider collaboration with the team in the plus-funded projects. These, along with our series of Country Background Papers, can all be found on our website www.tesf.network.

Some principles underpinning our approach towards methodology

Our approach to co-created research is underpinned and informed by three principles that we believe are important for undertaking work in the area of education for sustainable futures. These are set out below:

Transdisciplinary

Changing systems and developing pathways towards sustainability, unearth so-called 'wicked' challenges that require different ways of understanding the issues involved. We explicitly encourage research that is able to draw on perspectives from different disciplines and interests in the development process, including those of researchers, policy makers, practitioners and community-based organisations. A key principle is to actively seek diversity, forgotten or neglected perspectives and unusual partners.

Transformational

We are interested in research that has the potential to positively impact policy, structures and cultures, and social practices in organisations and communities and processes of teaching and learning in classrooms, informal settings, virtual and remote environments. Such transformative change may relate to processes, policies, cultures, structures and practices not only within but also beyond education.

Transgressive

By 'transgressive' research, we mean that not only does our work transform but it overcomes existing barriers by generating agency and challenging oppressive practices. Transgression has to do with the disruption of, often highly resilient, patterns, routines and systems that have become so self-evident and obvious that people take them for granted and consider them to be normal. This need not be a problem when these patterns, routines and systems are helpful, healthy and sustainable, but this is highly problematic when they are not.

What do we mean by knowledge co-creation and why is it important?

Knowledge co-creation has a long history in both the global North and South and has evolved as a concept. It has been understood and applied differently across disciplinary and research contexts² so it is important to be clear about what we mean by the term in the context of TESF and our overall aims and objectives. It is important to stress that whereas members of the TESF network plus partner organisations have considerable experience of undertaking co-created research, our own understanding is itself evolving and that our ideas are therefore intended as a contribution to ongoing debates.

At its most basic level, we understand 'knowledge co-creation' as research that is undertaken in equal partnership between academic researchers and other stakeholders including those who may potentially benefit from the research, have a deep understanding of the context of research and/or who may have a role in putting the findings of the research into practice. These might include for example, policy makers, practitioners, people

² Across research disciplines, there are other terms often used interchangeably with co-creation such as co-construction, participatory (Nind, 2011), co-creation, collaboration, co-design, co-operative inquiry (Heron and Reason, 1997) and participatory action research (Openjuru et al., 2015), albeit with different aims.

working in non-governmental and community and grass roots organisations³.

There are, however, different kinds of knowledge co-creation and it is important to be aware of these. Facer and Pahl (2017), for example, provide a useful categorisation of different kinds of knowledge co-creation that are of potential relevance for TESF research. Each involves different aims and rationales for undertaking the research, different kinds of participants and ways of collaborating in the research process, the use of different research methods and different intended outcomes. Drawing on these insights, it is possible to identify four broad types of knowledge co-creation.

Below are presented the four types with case study examples for each. Through the brief descriptions, you will see that co-created and collaborative research can involve a broad range of participants as co-researchers, or even 'co-conspirators'. This has the benefit of bringing together diverse knowledge to tackle locally-identified challenges, resulting in changes to understanding and practice. As the examples illustrate, co-creation is amenable to a wide range of methods and approaches to inquiry and analysis. The topic of methods is addressed in further detail later in the paper.

Type one: Mutual learning for community development

A knowledge co-creation approach has often been adopted by researchers interested in contributing to particular areas of community development and empowerment whether this is tackling the local effects of climate change or exploring the potential for community action to improve urban environments. The aim of this kind of research is often to produce real world outcomes but also to empower those involved in the research process itself. This kind of research may involve undertaking action research or developing communities of practice. In this way 'community' can be understood as a geographically located space, such as a village or city, or equally as a group of practitioners or activists. In this kind of research, communities themselves, alongside academically based researchers constitute the research team.

Example A: Rwanda Ubudehe

From 2001, the Rwanda Ubudehe project has been using a community participatory approach to develop poverty reduction strategies in communities across Rwanda. This project adopts the traditional Rwandan concept of Ubudehe, translated as 'local collective action and mutual support'. Ubudehe is based on collaboration, mutual assistance, trust and reciprocity between community members who have to work together in order to find solution to their socio-economic problems. Over 10,000 individuals have been trained nationwide as community facilitators of the Ubudehe approach to poverty identification and intervention. These identify community leaders, partner with NGOs and aim to work with all households in a community. Funds are distributed to community members who map community, identify the types of poverty and coping strategies used by community members, assign priorities to identified problems, and develop interventions. This co-creation approach eventually became a national policy.

³ For this reason, we define 'researcher' as including both individuals based in academic settings and those who may be interested in undertaking research but are based in non-academic settings.

Example B: Not Yet Uhuru!

This research project seeks to forgo youth development strategies that act as a form of containment by prescribing normative aspects of citizenship on young leaders in ways that stifle the transgressive impulses they have reason to value⁴. It involved 21 Change Drivers across South Africa. Participants got involved because they were interested in regenerating and re-imagining what transgressive decolonial praxis could be. To do this, they reflected on their current praxis and what transgression means to them. Together with the lead researcher songs of the rising cultures currently underway were produced as a reflexive pedagogical tool (Kulundu-Bolus, 2020). The specific methods used are further described later in this paper.

Type two: Working together to pool knowledge

Some co-created projects focus on finding ways to collaborate in order to facilitate innovation and advance understanding and thinking on specific topics. This kind of approach involves developing a framework within which many individuals can contribute towards an output. Examples include crowd sourcing for new innovations or processes of open science that encourage the public to provide data that can assist in solving problems. The aim is to produce insights that could not have been produced without a massive collective effort.

Example A: miniSASS

miniSASS - the mini Stream Assessment Scoring System - is a simple tool and framework developed in South Africa which can be used to monitor the health of a river. Citizens, individually and collectively, collect samples of macroinvertebrates (small animals) from a local river, stream, lake or pond that enables them to determine its health, as demonstrated in [this video](#). Through miniSASS, people can learn about the water quality within their community, and explore reasons why it may not be up to the standard they would like. Through the [Interactive Map](#), citizens can explore their own catchment, look at any existing results already entered and then upload their own. The map also shows the various land uses and activities that affect water quality negatively or positively. The differences in water quality across the watershed and within the country will also give rise to question about water justice.

Example B: Sandwatch

Operating since 2001, this long-term citizen science project has developed a network of volunteer participants including students, teachers and school principals from over 30 countries. Using mass citizen data gathering, the initiative trains participants to scientifically monitor beaches and coastal areas in their communities. The generated data feeds into a global database which is used to monitor the effects of climate change on coastlines, including erosion, pollution and sea turtle nesting patterns. The educational process developed by the project further seeks to instill lifestyle choices by helping communities to develop and implement sustainable activities to address the problems they are monitoring.

Type three: Design and innovation in the development of services and products

Other projects aim at improving public services such as education and training, housing, water, sanitation etc. through co-designing new initiatives between policy-makers, practitioners and communities who rely on these services. The aim is to design better services according to the needs of communities.

⁴ See Kelley in Tuck and Yang (2014, p. 89)

Example A: Tribal Education Methodology: Sustainable Education through Heritage and Performance in India

This project is creating a curriculum for tribal education for 10 to 16 year-olds in Kerala to address concerns that the existing education does not take into account many tribal forms of learning. Currently, many youth from the indigenous tribes of Wayanad District are out of school. This project therefore co-creates with youth themselves through a participatory action methodology. Participants in this project are digitally documenting oral traditions, developing a toolkit for inclusive education for use in schools, and establishing a youth-led drama club. In this way, both services and products are being created through the collaboration, as well as a partnership with the state education board.



Example B: 'In Our Own Voices'

This participatory research project problematised the wellbeing and welfare of female undergraduate students in Nigeria with 15 co-producers of knowledge. It critiqued existing national and higher education welfare policies and environmental and socio-cultural practices that marginalize and disadvantage female students. The project established a group of female students who advocate for improved services and policies. These include improved welfare services such as safe accommodation, sanitary amenities and healthcare in Nigerian educational institutions. This has been achieved by engaging with higher education authorities and policy-makers. The participants are now compiling a co-edited book of stories of their lived experiences, primarily for the benefit of other communities of female students, as well as for policy practitioners to advance the changes in available welfare services (Nwako, 2020).

Type four: **Correcting the record and challenging inequalities**

Some co-created projects focus on critical research aimed at better understanding different kinds of oppression and exclusion and seeking ways to challenge different kinds of injustice. Researchers interested in understanding injustices based on class, caste, gender, ethnicity, language, sexuality or other kinds of inequality often seek to involve and capture the voices and testimonies of groups who are themselves victims of different forms of inequality or exclusion. Examples here might include history from below, decolonial or feminist approaches.

Example A: South African Rurality in Higher Education (SARiHE)

This study addressed the unequal participation and academic achievement of students from non-traditional academic backgrounds in Southern African higher education. It investigated the challenges encountered by students from rural areas in Southern Africa to understand how they negotiate the transition to higher education (Timmis et al., 2019). More than 65 students participated as co-researchers, representing their lives through a range of methods described later in methods section of this paper.

Example B: COVIDEV in Somalia/Somaliland

This study explored how to protect people from the Covid-19 disease, and their responses to the disease, in ways that promote sustainable development in Somalia/Somaliland. Through its methodology, the project deliberately fought against existing societal inequalities by working with individuals who do not normally get a chance to take part in research. The intention was to hear a range of voices that otherwise get excluded in societal debate and decision-making. This was aided by placing priority on making participants comfortable with the research process through multiple language use to suit participants and multiple points of interaction - each participant took part in at least five discussions during the research process. Co-creation was also a feature through involvement in the interview question development and in the project evaluation.

Assumptions and motivations in co-created research

Although it can be seen that each of these four approaches differ in their rationale, aims and methods, they also share some common assumptions.

One of these is the belief that co-created research can help to make the findings of research more relevant for those who it is intended to benefit. Because knowledge co-creation typically draws on different kinds of knowledge, including potentially different kinds of disciplinary knowledge, as well as local and indigenous knowledge, it is often perceived as being appropriate for tackling complex problems. It is assumed that insights from different kinds of knowledge may be valuable in shedding light on the nature of the problem and in seeking out possible solutions appropriate for specific contexts.

A second assumption is that co-created research can assist in achieving 'ownership' of the research process by those involved in implementing the findings and hence in achieving desired outcomes. For many supporters of knowledge co-creation approaches, a key motivation is to democratise the research process itself through demystifying what it means to undertake research and breaking down traditional boundaries and hierarchies in the research process including what is considered to be 'expert knowledge' and who is considered an 'expert'.

A further motivation for adopting a co-creative approach to research comes from recent work on decolonising knowledge. Decolonising approaches bring together a range of perspectives that have in common a critique of the Western-centric nature of development and of development discourse since colonial times. A focus for our work across the four countries we will be working in is to problematise the relevance of the idea of sustainable development through bringing global understandings and agendas into conversation with more localised perspectives and realities. A fundamental part of decolonial work requires us to not only notice epistemicide, or destruction of knowledge, but also to name the absences and to find ways of going beyond the 'waste of knowledge' (Santos, 2014). This challenges us to colour our imaginations with what exists yet remains unheard in a language of its own choosing. In practice, this means we are interested in funding research that invites different types of knowledge

(e.g. local, experiential, indigenous scientific) and different ways of knowing (e.g. inductive, deductive, relational).

The challenges of knowledge co-creation

It is important to note, the idea of knowledge co-creation has not been without its critics and it is important to recognise the challenges and limitations associated with the approach as well as with the associated idea of transdisciplinarity. We will attempt to engage with some of the important ones in this paper. For example, co-creation is an approach to research that is often *unfamiliar* both for researchers based in academic institutions and those based in non-academic settings and requires careful explanation of what it does and does not mean. This is why we have tried at the outset to explain what we understand by the term.

Undertaking co-created research may also involve having to engage with very *different interests and rationales* within the research team. Researchers may have different motivations and may be accountable to very different constituencies for carrying out research compared to say policy makers or indeed community members who are intended to benefit from the research. Furthermore, the purposes of co-creating may not be clear to everyone involved. It can be difficult, or at times not possible, for co-created research projects to reflect the values of all involved. Differences may be compounded by radically diverse ways of framing the issues linked to the disciplinary background of researchers who are based in academic settings and between academic and non-academic members of the research team. It is very important to recognise these differences of interests, motivations and values at the outset of the research process as we discuss below.

Linked to this is the need to recognise and take full account of *deeply engrained inequalities* within the research process and team. This may include vastly different access to financial and other material resources such as access to ICTs that enable participation in the research process. These inequalities are likely to be heightened in the context of the Coronavirus pandemic. As we suggest below, it is therefore crucial to take account of differences in access to financial and other material resources in the construction of project budgets.

There are also likely to be *inequalities in access to different kinds of knowledge and expertise* that are considered important in undertaking the research. Some of these inequalities may in turn be linked to deeply held conceptions within the team and potential users of the research about what counts as legitimate 'research', who qualifies as a 'researcher' and how 'expertise' is defined and taken into account in the research process. In the context of collaborations between Northern and Southern partners, there have also often been inequalities in the division of labour with Northern based researchers playing a leading role in conceiving the research idea, analysing and interpreting data and disseminating the research. The role of Southern partners on the other hand has often confined to conducting field work and collecting data. There are both practical and ethical reasons for challenging these 'extractivist' approaches based on colonial models of research.

Another challenge to co-created research is the *amount of time, energy and resource* required to fully engage with the entire process and all involved. The nature of the methods, activities, interactions in co-creating are very likely to require more time, energy and resource than other forms of inquiry. For example, developing the relationships, trust and interactions that can make a co-created project thrive may be significantly more intense than participants expect. This may especially be the case for researchers new to co-creation who have past experiences in quick-turnaround projects, or for first time participants. This challenge can be addressed

when considered during the project planning stage when developing timelines, if time and resource expectations are mutually agreed and communicated early amongst participants and reviewed on a regular basis with the participants in order to avoid attrition.

A further area of concern often raised in relation to co-created research is around *issues of quality* including how the quality of the outputs of the research can be defined, measured and evaluated. There is a risk, for example, around the loss of the analytic capacity to understand whether co-created research is achieving its aims, whether those be to democratise, to improve quality or to create better products and policy⁵. For those from an academic background or for policy makers, the quality of the research may be seen to reside in traditional ideas about the validity, reliability and trustworthiness of the evidence produced. For other potential users of research the quality may reside in an assessment of the practical utility of research outputs. For funders of research it may be linked to ideas about the cost-effectiveness and value of money achieved through the research process. As we suggest below, it is important to agree criteria by which the quality of the various proposed outcomes of the project – whether in the form of written report, other kinds of tangible products from the research, forms of capacity development or new ways of working.

As we explain in more detail later, to overcome some of these challenges it is important that academic and non-academic researchers are involved at every stage of the research process including research design, data collection and analysis and in the development of outputs from the research and in processes of dissemination. It is also important that research is supported by processes of capacity mobilisation aimed at providing research teams with the necessary research skills as well as knowledge and understanding of the research context required to undertake the research. As we explain in a sister paper to this one, [capacity mobilisation](#) must involve multi-directional learning between researchers who may have very different kinds of expertise together to develop mutual understanding of the nature of the problems being addressed through the research and of different kinds of methods for gathering, analyzing and interpreting data as well as skills in presenting and disseminating research findings to different kinds of audiences.

Research methods for co-created research

The concept of co-creation has been informed from many traditions and has a wide range of interpretations. TESF plus funded projects will necessarily take varying forms and use different methods. In this section, we explore a range of methods which can be helpful for the different types of co-creation described above. The intention is by no means to be exhaustive, nor prescriptive, but rather to provide some further illustration of the variety of methods that teams may wish to consider in the plus-funded projects.

There are different ways to identify methods for a co-created research project. They may be chosen to suit the type of singular issue, or range of issues, being understood or addressed in the project. For example, some may take the form of action-research projects that address a particular issue within an educational system by co-creating an intervention aimed to overcome matters of concern within a community of practice. Others, might take multiple interrelated issues as identified by local stakeholders in a school or school region, using a multi-stakeholder '[living lab](#)' approach that includes a wide range of methods. Living Labs represent experimental, often temporary, alliances of stakeholders who jointly co-create, test and evaluate solutions to sustainability challenges.

⁵ See (Facer and Enright, 2016)

Perhaps a baseline understanding of a situation is needed, rather than an intervention, or indeed measurement of the effectiveness of an intervention is required. In this case it may be that more empirical analytical methods such as questionnaires and surveys and use of more large-scale data sets can provide some initial measurements and insights in the effectiveness of some interventions. Here, 'citizen science' approaches may be helpful, using methods that allow for mass data collection, pooling of knowledge. This may require the development of easy to teach and use measurement tools such as the *miniSASS* project, described above. In the *Sandwatch* project, a range of methods including in-person workshops and online tutorials in wave and water quality measurement, sea turtle observation, and database entry training were developed. Participants, particularly school children, also learn how to analyse and share their results through online presentations and newsletter creation.

If shedding light into the underlying causes and processes of change is desired, forms of qualitative inquiry including interviews, focus groups, arts-based or narrative inquiries might help to obtain deeper insights in the way people in the system are affected, their interpretations of what is happening, and their ideas about what should be changing and how. *The Tribal Education Methodology project* employed methods of theatre, dance, storytelling, and the digitizing of stories to meet its objectives. *Not Yet Uhuru!* used a locally developed concept of called "khapa(ring)" or accompanying the contemporary questions that Change Drivers in South Africa hold at the edge of their praxis. The 21 participants worked with the main investigator to develop songs that charted their transgressive journeys. The methods used to do this included reflective art-based workshops, video interviews and song writing.

Where correcting the record or challenging existing inequalities is the aim, methods may be chosen to aid the sharing of experience and life story. *The SARIHE project* used methodological choices as an opportunity to decolonise the data collection process in an attempt to reduce the 'influence and current flow of research from domination by the north [and the] prevailing political economy of knowledge production' (Timmis et al 2019, p. 15). The methods it used to achieve this involved student co-researchers representing their lives through diary notes, audio recordings, drawings, photographs and digital artefacts which were discussed in focus groups. Participants were also active in the analysis stages of the project and were involved in the sharing of findings through academic writing and presentations.

If working with a particular community to better understand an issue as a step towards the development of a service or intervention, forms of community mapping have proven helpful methods. The Rwanda *Ubudehe project* uses a form of community mapping to account for every household in the identified community and then assigns numerical indicators for pre-determined poverty types and coping mechanisms present in each family. In this way, the approach combines physical map drawing in a group setting with collection of community statistics into reports that get used to prioritise the community's needs. These are considered in group debate where interventions are decided.



There are many other methods suitable to co-created research that are not possible to describe here, but hopefully this gives some insight into the range of options available. More ideas can be found at the [Connected Communities](#) website, which shares hundreds of projects with a variety of methods to meet varying types of co-creation and objectives.

Coronavirus factors

At the time of writing this paper, many countries across the world are in various forms of lockdown as part of Coronavirus protection measures. This often requires limited physical contact to curb the spread of the virus. Without knowing how long this will persist, it is important to consider potential methodological modifications in the context of Covid-19 where it may not be possible to work face-to-face for some time. This raises particular concerns when wishing to co-create with more vulnerable groups that might have limited access to some of the technological modifications, such as video conferencing, accessing online documents and working over mobile apps. Our initial experience of undertaking research during the C-19 pandemic in TESF, however, has shown us that with careful consideration, flexibility, and preparedness, opportunities have arisen for research creativity, and innovation. When considering online collaboration, for example, we have found it necessary to be prepared to provide initial training and ongoing technical assistance to collaborators who may not be accustomed to using certain online platforms. It may also be necessary to purchase mobile data for their participation, otherwise cost could become an avoidable barrier. Such modifications need to be carefully considered in project planning, budget and resource allocation in the early stages so to avoid delays during project time and to ensure full participation of co-creators.

Ethical considerations

Any research must be guided by ethical principles, considerations and practices in order to uphold safety, fairness and responsibility of all involved. TESF's ethical principles, and the protocols and processes that ensure their implementation, will be further outlined in a separate ethics and safeguarding document. For the purposes of this paper, we specifically consider some of the ethical considerations particular to research collaboration and co-creation.

In developing our ideas about research ethics, TESF's work is informed by key ethical guidance set forth by our funding body (UKRI ESRC, 2020) and those that help to inform research practices in the field of education (British Educational Research Association (BERA), 2018). These inform our ethical *principles*, such as doing no harm, and *practices* which ensure, for example, that collaborators are duly informed of the inquiry in which they are taking part, that participation is wilful, that safeguarding measures are in place and other observances to which TESF will adhere. These

overarching principles and practices of implementation will be further available in our ethics and safeguarding documentation.

Bearing in mind the variety of TEF hubs and the international nature of our work, we are further guided by critical scholarship which engages with the disparities between western ethics practices and the realities of conducting inquiry in low income, postcolonial settings. This includes a call for ethics practices to be emancipatory, situated and dialogic (Tikly and Bond, 2013). TEF shares concerns about the frequency with which western or northern ethics practices and protocols 'have often been imposed on other cultural contexts' (Robinson-Pant and Singal, 2013, p. 443) whereby ethical practices can be at odds with the cultural values of collaborators (ibid). Recent work by MacMahon & Milligan, helps to address such discrepancies by proposing a values-based ethical framework to be used alongside existing ethical guidelines, which offers the following five principles: transparency and honesty, respect and care, conscious freedom, experiential and tacit awareness, and reflexive practice (McMahon and Milligan, Forthcoming).

In co-created research, the lines between 'researcher' and 'researched' are often necessarily blurred due to the collaborative nature of inquiry. This necessitates a deeper approach to research ethics that goes beyond mere issues of informed consent and participant right to withdrawal, or confidentiality, for example. While these matters remain important, co-created research often requires additional ethical considerations to mitigate risks. After all, co-creation of knowledge is not the same as co-creation of physical objects (Siry et al., 2011). It becomes important

therefore, to not only acknowledge, but also to mitigate, the risks associated with co-creation. For example, if used in a hegemonic or dominant way, we may fail to understand the different points of view, resulting in a form of methodological gatekeeping and loss of capacity in building alliances with communities.

In co-created and collaborative research, for example, issues of power dynamics become particularly important because who 'owns' the research where the process is less obvious. When it comes to power relations in collaborative research, Siry et al (2011) warn that the risks of unbalanced power are heightened when the push to 'get things done' challenges the necessary space for reflexivity. To avoid this, they stress that relations between collaborative researchers must be in a constant state of reflection and negotiation:

'If researchers who work together do not commit to rigorous reflection, and to revisiting this commitment to rigor, (individually as well as collectively) then we contend that they (we) run the risk of slipping into unequal and perhaps inequitable power relationships.' (Siry et al., 2011, p. 2)

Here, TEF's commitments to epistemic justice and mutual learning are particularly important. These concepts similarly inform our approach to capacity mobilisation and collaboration, and are further elaborated, alongside proposed principles for partnership working, in the corresponding background paper (Mitchell et al., 2020). These are reproduced in Box 1.

Box 1 – A Guide for Transboundary Research Partnerships: 11 Principles (KFPE)

- 1. Set the agenda together** – reach mutual agreement on the meaning and the purpose of work; joint development of research questions, approaches and methods
- 2. Interact with stakeholders** – involve potential users of research findings in the research process from the earliest stages so that they can inform the research foci/questions and participate in research activities, as appropriate
- 3. Clarify responsibilities** – effective partnerships rely on 'each partner contributing what they are particularly skilled in doing' (ibid., p6); dividing work in this way requires clarifying and assigning the responsibilities of different partners, and establishing rights and obligations
- 4. Account to beneficiaries** – ensure accountability to relevant stakeholder groups including potential beneficiaries, in addition to the funders
- 5. Promote mutual learning** – capitalise on diverse knowledge within the partnership by embedding structures and processes for dialogue and the ongoing monitoring and evaluation of achievements
- 6. Enhance capacities** – focus on strengthening the long-term institutional capacities for all partners (including those in the North)
- 7. Share data and networks** – Work towards the transparent and unrestricted flow of information between partners
- 8. Disseminate results** – ensure that learning is shared 'in forms that enable potential users to find, understand, and use them' (p11); translate outputs into appropriate languages and formats for different target audiences; 'insist on dissemination beyond Northern libraries' (ibid.)
- 9. Pool profits and merits** – ensure all partners receive a fair distribution of benefits, such as those resulting from authorship and publications
- 10. Apply results** – incorporate implementation/application phases into the research process; withstand pressure from funders to produce quick results rather than relevant outcomes
- 11. Secure outcomes** – establish long-term targets for sustainable institutional research capacity development

In addition to the above, Wals (2019) proposes that spaces for such work should incorporate, as a minimum, the following elements:

- Participation minimally distorted by power relations
- Pluralism, diversity, and minority perspectives
- Deep consensus, but also respectful disagreement and differences
- Autonomous and nonconformist thinking, self-determination, and [recognition of contextual differences]...(culturally, politically, socially, economically, and ecologically) (p62-63)

The above principles of partnership working are particularly important in the context of co-created research projects⁶. The principles can be seen to underpin the approach towards knowledge co-creation outlined in the next section.

⁶ The Common Cause project for example, offers similar principles to support fair and mutual research partnerships.

Putting Co-creation into practice

As this paper has demonstrated throughout, co-creating knowledge requires a range of considerations for there to be a positive and fruitful collaboration. In earlier sections, some of the common challenges and ethical considerations have been elaborated. As TESF plus funded research collaborations begin on the co-creation journey, the following lessons from the Connected Communities research project can be helpful as teams consider their own inquiries.

Explore why you and your research partner want to co-create knowledge

Explore the practical, personal and symbolic reasons for collaboration and those of your partner. Reflect on your expectations of what both parties can bring to the collaboration and how realistic these expectations are. Partners from different types of institutions, such as universities and community organisations, decide to work together for very different reasons. These reasons may be practical - access to resources, necessity of partnership to actually conduct the research; they may be personal - an intrinsic motivation, friendship or shared interest; they may be to do with wider agendas - changing the nature of research, rethinking university-community relationships. The important thing is to understand these different motivations and their implications for how you approach the project.

Establish your (competing) accountabilities

Think about and express the internal and external accountabilities within the project and consider how any tensions between them should be tackled. Co-creators are held within complex webs of accountability that shape what they can do. The core relations of accountability within projects are both internal (to the core project participants) and external (to disciplinary fields, to ideas of the 'public good' and to personal social networks). These accountabilities frequently compete and require negotiation.

Identify your co-creation approach and the implications for the shape of your collaboration

As identified above, there are many different approaches to knowledge co-creation which allow for varying organisational forms to carry out an inquiry. No approach is necessarily better than another. Differing world views, theories of change and traditions of research will result in different choices about how the collaboration works.

Consider how your answers to the following questions may shape and inform the decisions that underpin how the collaboration is designed and conducted:

- Why do we work with communities and with public knowledge? Do you think your partner has a right to contribute, shape and inform the knowledge produced about them or that your partner has knowledge, ideas and experience that will enhance the quality of knowledge produced by the project?
- What is the temporality of this project? Is the timescale of the project limited by the funding or will it exceed the funding period?
- What is the nature of the human relationships in this project? Are your relationships for the purpose and duration of the project or are they important in their own right and will outlast the project?
- Are we concerned with changing knowledge or changing reality?

- Who 'counts' as 'community' for this project? Is your focus on working with grass roots communities or on working with organisations who represent communities?
- Who chooses the research topic and when?
- How should governance reflect our values?
- Who are we accountable to?
- What assumptions about 'knowledge' are we working with?
- How might the quality of the various desired outcomes from the project be conceived, measured and evaluated?
- How will outcomes and outputs be shared, and how will co-creators be credited?
- What counts as a positive legacy?

Discuss money, time and resources with your partners

Consider how the money and time each partner can allocate to the collaboration may impact on interpersonal relationships, the nature of the partnership and the kind of outcomes that will be pursued. Questions of money, time and resource, and how these are organised and administered are critical factors in shaping how and whether projects are able to achieve their goals. A major consideration is to ensure that resources are distributed equitably and in a way that takes account of likely imbalances in access to resources. In the context of the Covid pandemic as discussed above, this might mean for instance, ensuring that participants in the research including those from historically disadvantaged backgrounds have access to necessary ICT infrastructure and data. It might also mean ensuring that participants are fairly paid for their participation in the research.

Consider the research legacy

Consider the potential for legacy from your collaborative partnerships in terms of the following broad areas:

- Products - what outputs may be produced? This may include publications, policy recommendations, tangible products, artistic expressions or other knowledge sharing means. How might the quality of the outputs be evaluated in a way that meets the requirements and expectations of different groups that the project team may be accountable to, including for instance the funders of the research and the communities that the research is intended to benefit?
- People - how may the project contribute to learning, to capacity mobilisation, to confidence and capabilities, to feelings and emotions, to the development of careers and personal security?
- Networks - what new connections, relationships and networks may emerge?
- Concepts - could the project lead to new languages, tools and ideas?
- Institutions - what implications may the project have for the structures, processes and practices of partners' institutions? How will the proposed research contribute to longer term capacity building in the partner organisation?
- The research landscape - what foundations may be laid for future collaborations?

(Adapted from <https://esrc.ukri.org/collaboration/guidance-for-collaboration/lessons-for-collaborative-research/>)

Conclusion

In this paper, we have suggested that knowledge co-creation can provide a promising approach for conducting research into education for sustainable futures although it also presents challenges for research teams. The ideas presented in the paper are intended as a contribution to on-going discussion and it is intended that through our work as an expanding network we can build on these insights.

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Acknowledgements The support of the Economic and Social Research Council (UK) is gratefully acknowledged by TESF (award title 'UKRI GCRF Transforming Education Systems for Sustainable Development (TES4SD) Network Plus').

Contact Terra.Sprague@Bristol.ac.uk

Suggested Citation Sprague, T., Nwako, Z., Kulundu-Bolus, I., Tikly, L., Wals, A., Facer, K., Elmi, M., and Imaniriho, D. 2021. Co-Creating Education for Sustainable Futures: TESF Methodology Background Paper. Bristol, TESF. DOI <https://doi.org/10.5281/zenodo.4460146>

Version 1.0 – 24 January 2021

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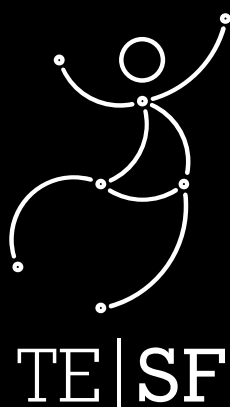
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www.tesf.network
info@tesf.network
[@TransformingESF](https://twitter.com/TransformingESF)

The Author Team

Terra Sprague, Zibah Nwako, Leon Tikly, Keri Facer **University of Bristol**
Injairu Kulundu-Bolus **Rhodes University**
Arjen Wals **Wageningen University**
Mustafe Elmi **Transparency Solutions**
Dan Imaniriho **University of Rwanda**