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ARTICLE

# Open Educational Practices and Attitudes to Openness across India: Reporting the Findings of the Open Education Research Hub Pan-India Survey

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In recent years India has shown a growing appetite for open educational resources (OER) and open educational practices (OEP). Despite this, there is a paucity of research on OER use and impact, the extensiveness of OEP, and attitudes towards openness in India. This paper reports on research intended to help fill that knowledge gap by conducting a pan-India survey using many of the questions developed by the UK Open University's Open Education Research Hub (OERH) for use in its OER impact research around the world (http://oerresearchhub.org/collaborative-research/instruments/). Delivered online, in English and Hindi, the pan-India survey is the biggest of its kind to have been conducted in India. Analysis of the collected data reveals extensive evidence of educators using OER to improve their teaching, and survey respondents' common belief in the educational benefits of OER. In addition, despite encountering greater technical and structural barriers to OER use than those typically experienced by OERH survey respondents from the Global North, the pan-Indian survey respondents tend to show more engagement with OEP than their developed country peers, notably in terms of creating resources and publishing them on a Creative Commons (CC) license, and in adding comments to OER repositories. Accordingly, this paper presents an emergent model intended to better capture the rich contextual factors inhibiting and enabling OER use and OEP in the Global South. It must be acknowledged, however, that our findings relate to a fairly highly educated selection of educators, teacher-educators, students, education managers, academics, activists and policymakers. We therefore plan to expand on our model by conducting further research with a more diverse group of respondents, to include people facing technological, economic and societal barriers to using OER.

**Keywords:** Teachers; OER; OEP; India; Open Educational Practices; Open Educational Resources

## Introduction

The leverage of Open Educational Resources (OER) is widespread in the Global North (Open Education Europa, 2015). OER use within the Global South has been similarly promoted by many as offering increased access to and development within education. However, understanding the true impact of OER in the Global South is problematic, with debates on the topic often dominated by a rhetoric reflecting northern assumptions and priorities and an implicit view that 'the rich north. . . push[ing]. . . resources at the south without thought of reciprocity' (Glennie et al., 2012, p. v), on a 'one size fits all' basis, is entirely acceptable. Indeed, Bateman, Lane and Moon (2012, p. 3) observe a tendency for the OER movement to be seen as (and see itself as) 'benevolent, developed country 'providers' of OER' as distinct from 'passive, developing country 'users' of them'. Add to this a 'deficit view' of the potential for OER in development contexts (Glennie et al., 2012, p. 4) and such rhetoric has the potential to obscure any real insights into how and why OER are being used in the Global South. Projects such as Research on Open Educational Resources for Development (ROER4D) (see http://roer4d.org/) are helping to transform the nature of research around the impact of OER in the Global South by adopting a more participatory approach than has previously been common. Our own research is intended to complement their work, and takes India as its focus.

India's government has supported OER initiatives in both policy and practice. In 2008 the National Knowledge Commission (NKC) called for a national e-content and curriculum initiative to stimulate the creation, adaptation and utilization of OER by Indian institutions and the leveraging of OER produced outside India. In 2013, India gained its own national OER repository (http://nroer.gov.in/home/), extending the OER provision by repositories

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such as the Indira Ghandi National Open University (IGNOU)-hosted e-GyanKosh (http://www.egyankosh.ac.in/). In 2014 India's first MOOC platform – SWAYAM – was announced by India's Prime Minister Narendra Modi in his Independence Day speech. Open educational practices (OEP) have also been nurtured, for example through the Wikimedia India Chapter (http://wiki.wikimedia.in/) and Creative Commons India (https://wiki.creativecommons.org/wiki/India), in addition to the Karnataka OER (http://karnatakaeducation.org.in/KOER/en) and Subject Teacher Forum (http://karnatakaeducation.org.in/KOER/en/index.php/Subject_Teacher_Forum) teacher education projects led by Indian NGO IT for Change (see Perryman, 2013a).

Tracking the development of OER in India, Das (2011, p. 14) concludes that 'Indian OER initiatives serve diverse learning communities and bridge knowledge gaps between privileged and under-privileged communities'. Thus far, such bridging has occurred on a fairly small scale, with much of India's population facing numerous barriers to digital participation (see Perryman, 2013a). However, the Digital India initiative (http://www.digitalindia.gov.in/) launched by the Indian government in 2015, with the aim of improving digital infrastructure (especially in rural areas) and digital literacy, in addition to delivering services digitally, may go some way in helping to reduce some of these barriers, making OER projects more feasible. Research into OER use and attitudes towards openness is vital in informing projects that are relevant to local contexts and which contain realistic objectives. To date, research on OER use in India has tended to focus on overviews of OER initiatives (e.g. Das, 2011), the attitudes and practices of teachers and academics (e.g. Sharma et al., 2014) and teacher educators (Perryman et al., 2014; Buckler et al., 2014; Perryman, 2013a), rather than ranging more widely. Indeed, as yet there has been no major survey of OER use in India. This paper reports the early findings of a research study intended to address this lack of empirical evidence through a pan-India survey of OER use, impact, and attitudes towards openness.

## Methods

The biggest of its kind conducted in India, the survey that is the basis for this report is part of a four-phase research study:

- Phase 1: An online-only survey pilot leading to initial data analysis and findings, and survey fine-tuning (reported in this paper);
- Phase 2: The fine-tuned online survey is disseminated to a wider audience across India;
- Phase 3 (conducted simultaneously with Phase 2): Hard copies of the Phase 2 survey are distributed across India;
- Phase 4: Data analysis and follow-up interviews.

The Phase 1 survey was conducted using the web-based Survey Monkey tool (https://www.surveymonkey.com/). Three surveys were created, one each for educators (https://www.surveymonkey.com/s/india-educators) and formal learners (https://www.surveymonkey.com/s/india-students), and a further 'General' survey for people in neither of those categories (https://www.surveymonkey.com/s/india-general). The surveys are dual language (**Figure 1**), created in English with a Hindi translation provided by PhD student Janesh Sanzgiri. Availability in English and Hindi language versions was intended to increase the surveys' reach.

The surveys use many of the questions developed by the Open Education Research Hub (OERH) (formerly the OER Research Hub) (see Weller et al., 2015; Farrow et al., 2015; de los Arcos et al., 2015; de los Arcos et al., 2014) allowing for global comparisons to be made, with the addition of questions pertinent to the Indian context. The surveys were promoted via social media (e.g. Facebook groups, Twitter, LinkedIn) and via emails sent to faculty in several Indian universities and to the two authors' existing contacts in India. For the purposes of our data analysis we have made a distinction between the Global North and Global South (or 'developed' and 'developing' countries), following Wikimedia's regional classification (https://meta.wikimedia.org/wiki/List_of_countries_by_regional_classification).

### *The sample*

The online-only format of the survey, and its methods of promotion, have resulted in a quite tightly bounded sample, comprising educators in the secondary school (K12), college, higher education and work-based learning sectors, in addition to teacher-educators, education managers, NGOs, academics, activists and policy-makers. **Figure 2** shows the age and gender of respondents across the three respondent types, indicating that the educators answering the survey tend to be older than the other respondents and that there are a greater proportion of women amongst the educators than the other categories. **Figure 3** shows the geographical distribution of the sample, who are fairly evenly spread across India, but with a large concentrations of respondents in the National Capital Territory of Delhi, in Karnataka (the home of Karnataka OER) and in Maharashtra, with its capital Mumbai.

Perhaps unsurprisingly, considering the online survey format and methods of promotion, the majority of the Phase 1 survey respondents are very well qualified, as shown in **Figure 4** and **Table 1**, mirroring the qualification level of respondents in the OERH global dataset (De los Arcos et al., 2014, p. 10). Even so, 26% of the pan-Indian formal learners only have a school-leaving qualification.

All categories of survey respondent indicate that they connect to the Internet in multiple ways, with most using their own devices and almost all able to access the Internet at home (**Figure 4**). This is in stark contrast with the overall level of Internet connectivity in India, where just 19.7% of the population had Internet access in 2014 (Internet World Stats, 2015). Again, though, the degree of Internet access amongst the sample is not surprising as the Phase 1 survey was conducted online. The high level of smartphone use is in line with a country-wide dominance of smartphones as a main method of Internet access, with

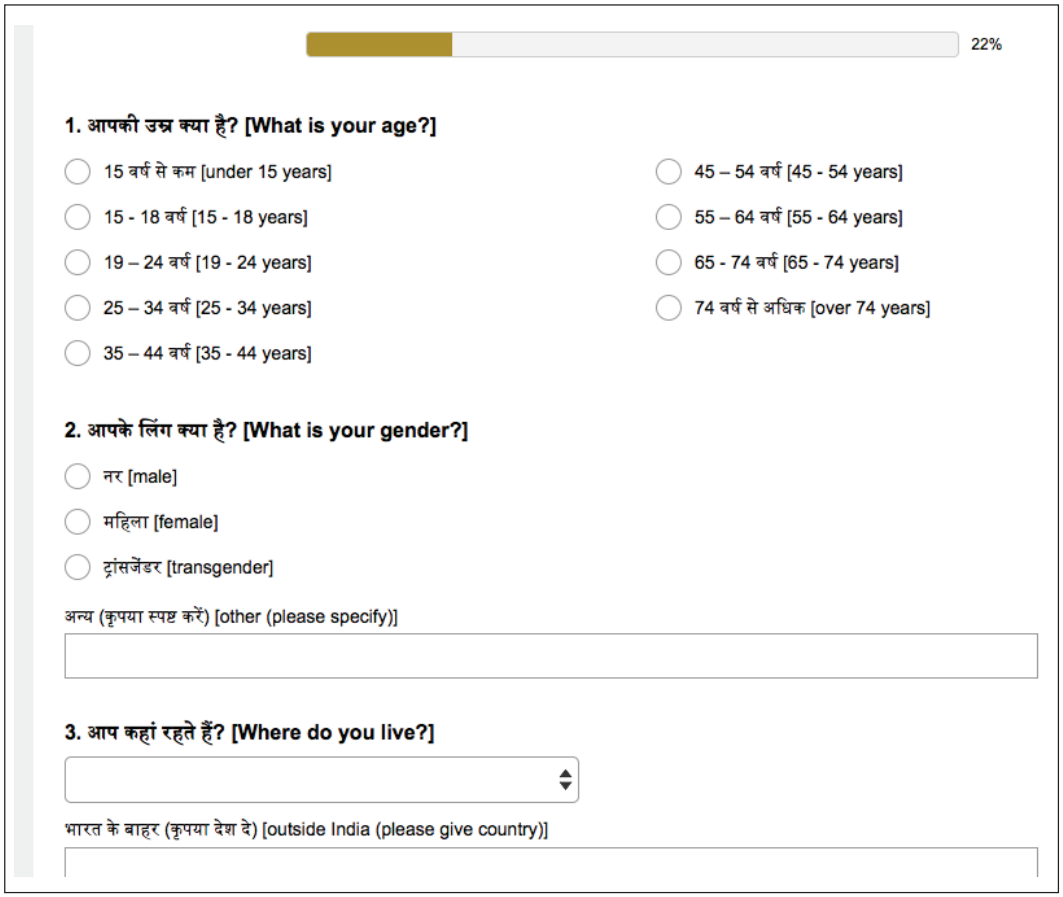


**Figure 1:** Example of the dual language survey.

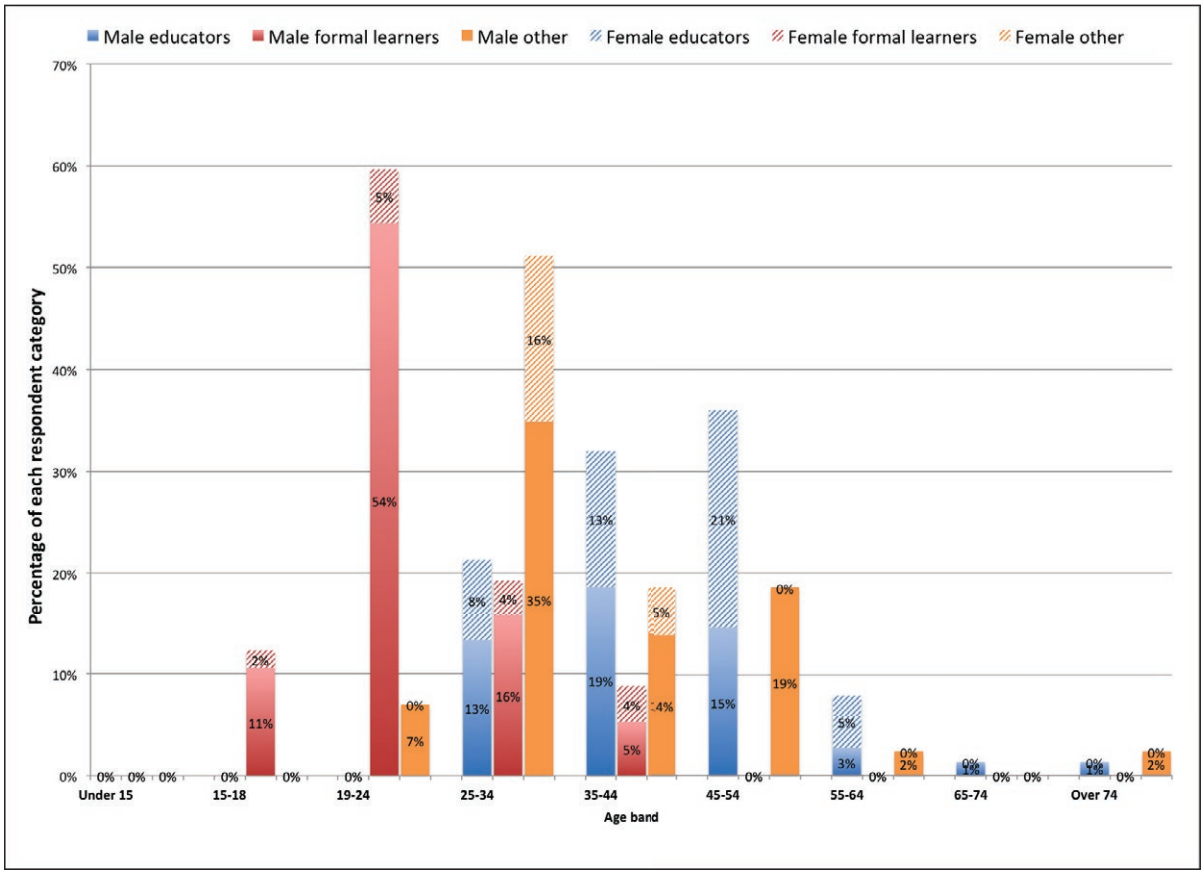


**Figure 2:** Age and gender breakdown across respondent types.

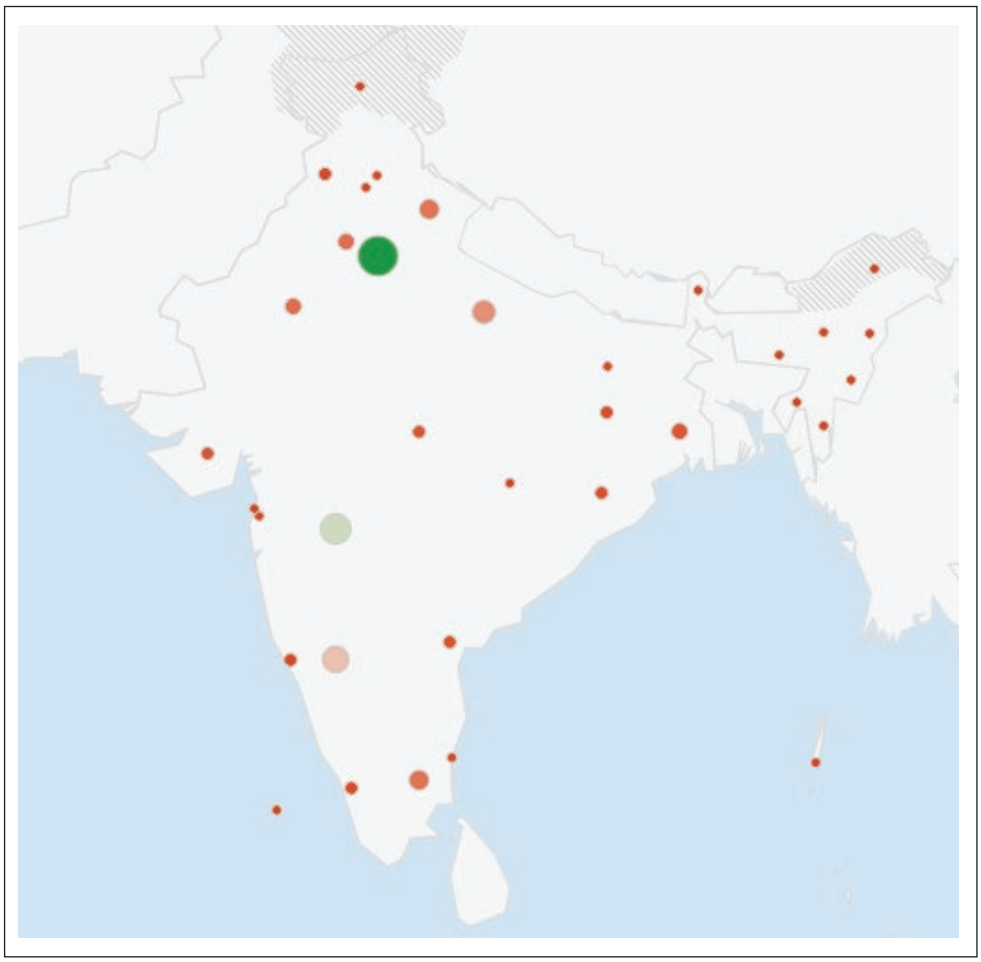

**Figure 3:** Geographical distribution of survey respondents across India.

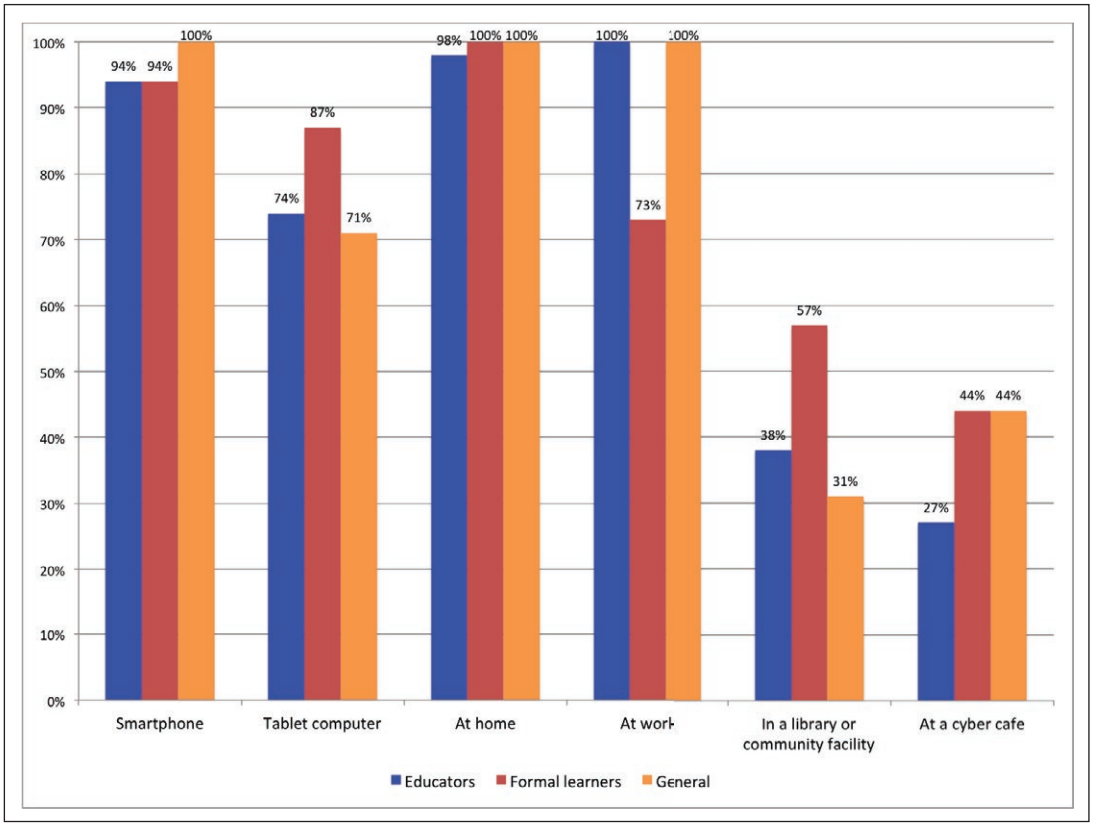


**Figure 4:** Internet connectivity and device use across respondent type.

| | Educators | Formal learners | Others |
|---|---|---|---|
| School-leaving qualification (16–18 years) | 0% | 26% | 0% |
| Vocational qualification (i.e. practical, trade-based) | 0% | 2% | 0% |
| College diploma or certificate | 3% | 7% | 2% |
| Undergraduate/Bachelors University degree | 5% | 43% | 27% |
| Postgraduate/Graduate School University degree | 92% | 22% | 68% |
| No formal qualification | 0% | 0% | 2% |

**Table 1:** Sample breakdown by qualification, across respondent type.

a recent report showing that 69% of Web traffic in India is via a mobile device (Mander, 2015).

## Findings

Analysis of the Phase 1 survey results has resulted in some early findings giving an emergent picture of how a group of largely well-educated people, with good levels of digital literacy, are using OER for teaching and learning. The survey data also suggests that OER are having a positive impact on educators' professional development and on formal learners' study performance and overall learning experience. However, it is apparent that even amongst this group of people barriers to OER use remain.

### *OER use and digital literacy*

Drawing on the OERH open survey questions we were interested not only in finding out about survey respondents' typical OER use, but also in ascertaining their level of digital literacy, which Martin and Grudziecki (2006, p. 255) define as:

> The awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse, and synthesize digital resources, construct new knowledge, create media expressions, communicate with others, in the context of specific like situations, in order to enable constructive social action; and to reflect upon this process.

**Figure 5** shows that the majority of respondents in all categories had been using OER for over 2 years, though 25% of respondents completing the general survey had never used OER. The data concerning the main sources of OER for survey respondents (**Figure 6**) offer an insight into the relationship between Indian and international OER repositories, and the typical users of these repositories. Key findings include the fact that:

- Educators appear to be using Indian OER sources more than formal learners and people completing the General survey;
- Formal learners are using a wider range of OER sources than educators, and are doing so more extensively;
- YouTube videos are particularly popular for all categories of respondent – a finding echoed in the OERH global dataset (see de los Arcos et al., 2014).

Seeking to provide a nuanced picture of possible inhibitors to OER use in India, informed by Perryman's (2013a) findings that Indian teacher-educators' lack of ICT skills can be a barrier to their using OER, we used the OERH digital literacy indicator questions to assess respondents' ICT skills and practices. The collected data (see **Table 2**) show a fairly high level of digital literacy across all respondent categories – perhaps unsurprisingly bearing in mind the fact that the survey was conducted online and promoted through email, Twitter, LinkedIn and Facebook. It is notable, though, that there are fewer educators, proportionately, than there are formal learners and other respondents across many of the practice categories. This could be related to the fact that the surveyed educators are, on the whole, older than the other respondents (see **Figure 2**).

### *Open educational practices and attitudes towards open licensing*

In recent years the OER movement has begun shifting focus from OER release to open educational practices (OEP) (Cape Town Open Education Declaration, 2008; Guthrie et al., 2008), and from OER use to adaptation and reuse of resources. Accordingly, the OERH global research has foregrounded questions about whether people use OER differently from other online materials (see de los Arcos et al., 2014, pp. 13–16) and more generally whether there is a 'spirit of open' – 'an ethos connected with the use, adaptation and reuse of OER that is distinctive and which can be identified amongst educators, learners, academics and institutions' (Perryman, 2013b). The Phase 1 pan-India survey included questions both about respondents' open educational practices and about their understanding of open licensing.

**Figure 7** shows fairly high levels of OER adaptation across all respondent categories, though slightly lower than the OERH global figures (see de los Arcos et al., 2014, pp. 13–16). The Indian educators also appear more engaged in OEP such as resource creation and publishing on a Creative Commons (CC) license than are the other Indian survey respondents and the educators in the OERH dataset. de los Arcos et al. (2014, p. 13), commenting on the scarcity of educators (12%) in their dataset creating resources and publishing them on a CC license, despite the fact that 'a majority of educators (67.5%, n = 216) consider open licensing important and are also familiar with the Creative Commons logo (55.7%, n = 182)', suggest that educators' non-creation of CC-licensed OER is 'consistent with the fact that only 26.8% (n = 215) of educators are

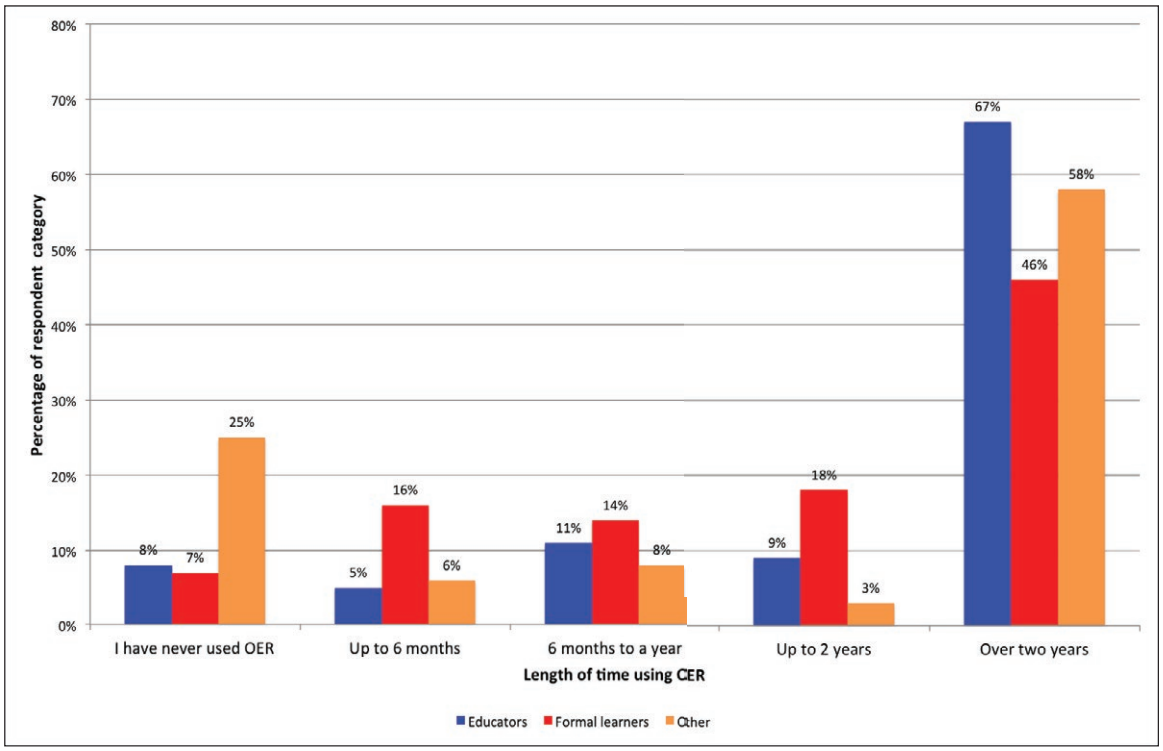


**Figure 5:** Length of time using OER.

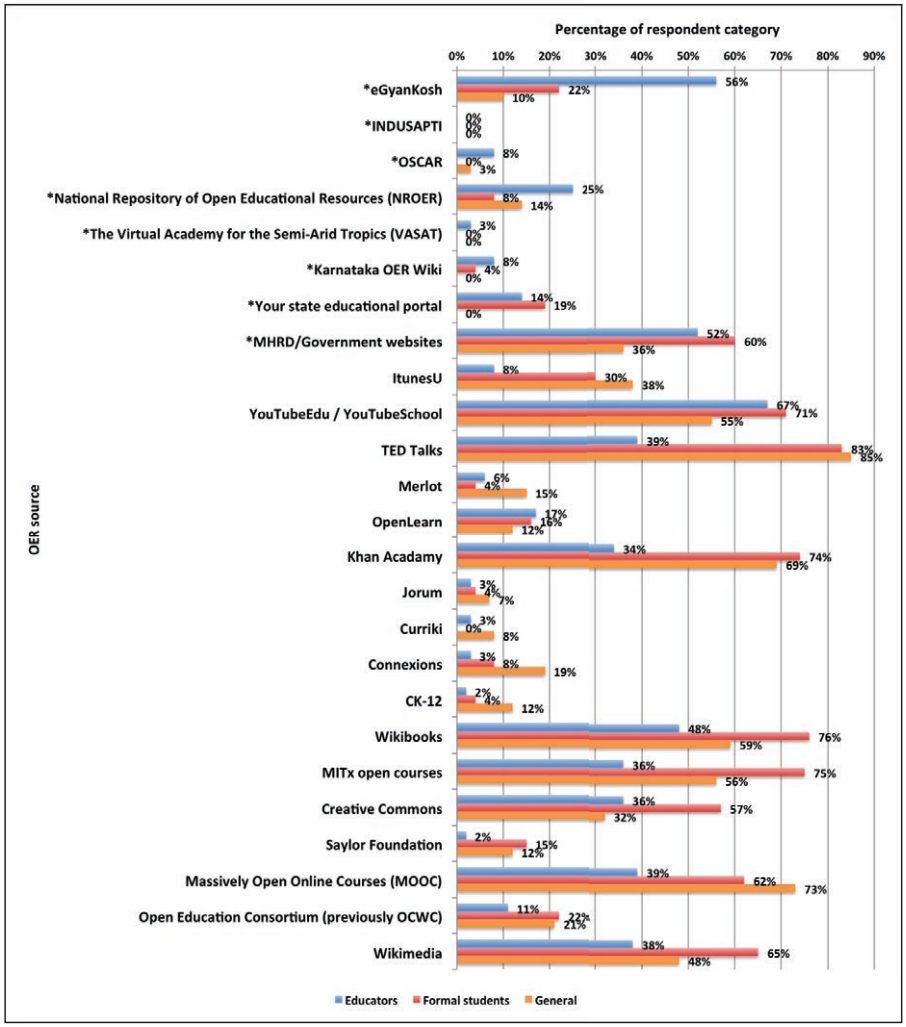


**Figure 6:** Top 16 sources of OER, by category of survey respondent (note * indicates Indian repository/website).

| | Educators | Formal learners | Others |
|---|---|---|---|
| Sent an email | 99% | 100% | 100% |
| Used word processing software | 99% | 100% | 100% |
| Used presentation software | 99% | 94% | 93% |
| Used spreadsheet software | 89% | 85% | 98% |
| Contributed to a wiki | 53% | 54% | 57% |
| Written a blog post | 52% | 59% | 65% |
| Shared an image online | 58% | 76% | 70% |
| Posted on a microblogging platform | 47% | 68% | 71% |
| Took part in a videochat | 86% | 76% | 83% |
| Contributed to an Internet forum | 64% | 80% | 74% |
| Contributed to a social network | 91% | 90% | 87% |
| Used cloud-based storage | 85% | 98% | 100% |
| Shopped online | 84% | 100% | 95% |
| Downloaded a podcast | 47% | 63% | 62% |
| Downloaded a file using a torrent client | 42% | 89% | 72% |
| Filmed and uploaded video content | 70% | 61% | 54% |
| Used a virtual learning environment to study or teach | 62% | 74% | 50% |
| Recorded and uploaded a podcast | 22% | 19% | 19% |
| Used a messaging service, e.g. WhatsApp | 89% | 92% | 98% |

**Table 2:** Digital practices across all respondent categories.

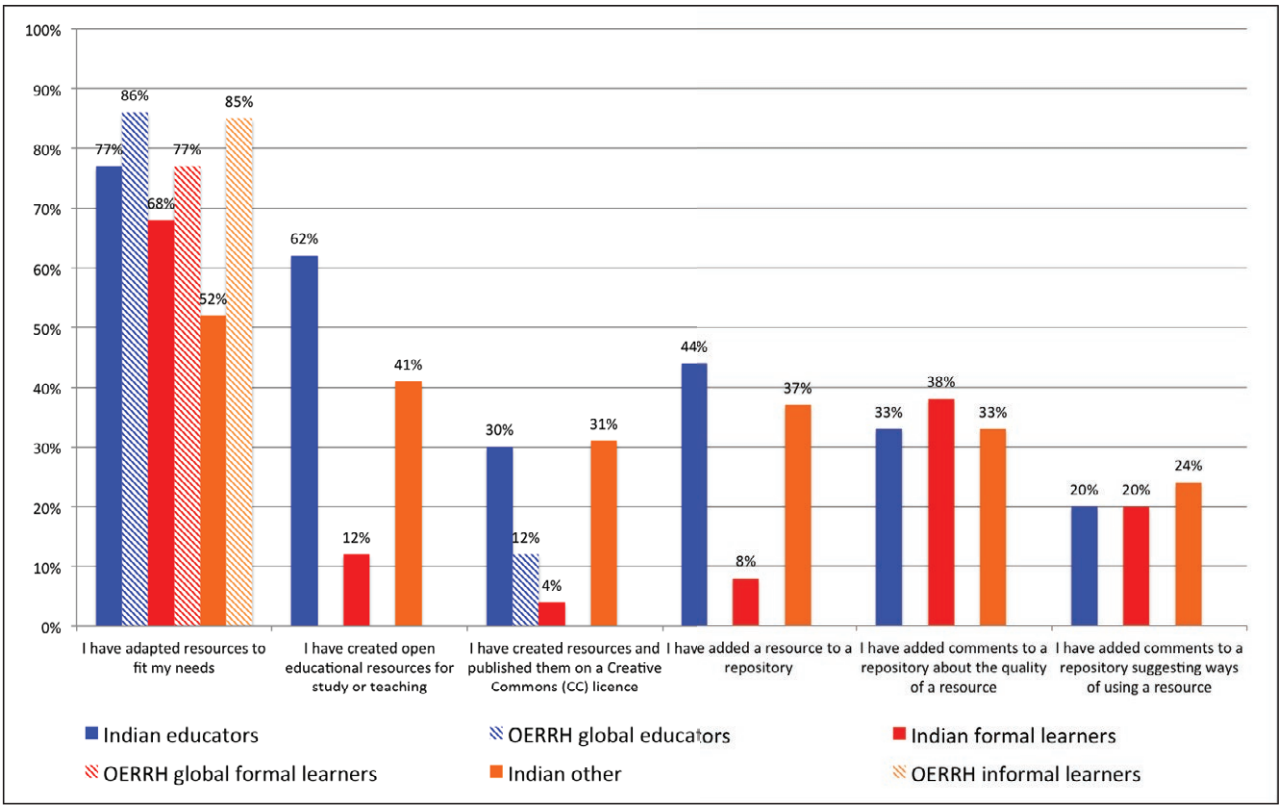


**Figure 7:** Open educational practices across all categories of respondent, including comparison with the OERH global dataset.

concerned with not knowing whether they have permission to use or change a resource'. The number of Indian educators creating and publishing CC-licensed resources is consistent with the fact that 55% *are* concerned with knowing whether they have permission to use or change a resource – an increase on the OERRH global educator figure.

Responses to an open question in the pan-India survey on the impact of OER on sharing practices revealed that many educators share more often and more widely as a result of using OER:

> 'I have started feeling that there is no harm in sharing my PowerPoint slides or other study material across the globe.'
> 'More awareness about Creative Commons licences.'
> 'I am more open to sharing after using OER.'
> 'I now try and create educational material that is well researched, student friendly, age appropriate, basically following Bloom's Taxonomy and also send it across to the class teacher of my daughter's school for open distribution etc., for the benefit of all the other students as well and as a repository for the teachers.'
> 'I have created a website with which to share information.'
> 'Now I frequently share my notes/educational materials/knowledge on social media and different platforms and whatever I read/study on OER I share the links with friends for further discussion over that topic.'

### *Exploring educators' use of OER in more depth*

The Phase 1 educators' survey data is worth exploring in more detail to get a sense of the practices and priorities of this group of people, especially bearing in mind the fact that OER projects such as TESS-India (www.tess-india.edu.in) are creating OER for use by teachers and teacher-educators and could benefit from such evidence. The majority of the surveyed Indian educators (64%) have been teaching for over 10 years, 100% use OER for professional development reasons and 92% for use when teaching or training in an educational institution. In addition, 46% suggest that they use OER to improve their non-native language skills. **Table 3** shows that the educators span all sectors of the Indian education system.

Educators were asked both about their aims for using OER and about the impact of their OER use. **Table 4** sets their responses in a global context, comparing the Indian educators' answers with three respondent types in the OERH global dataset:

- Educators using The Open University (UK) OpenLearn open content platform (http://www.open.edu/openlearn/);
- Educators using the Saylor.org open content platform (www.saylor.org);
- Educators from the Virtual University for Small States of the Commonwealth (VUSSC) (www.vussc.info).

| | |
|---|---|
| School education | 42% |
| Further Education/College | 52% |
| Higher Education/University | 90% |
| Work-based education | 69% |
| Personal tutoring | 37% |
| DIET or a state teacher training centre | 17% |
| Private college | 19% |

**Table 3:** Educators, by sector.

**Table 4** shows that the Indian educators are not only using OER within their teaching; they are also using them to develop their professional practice. Interestingly, there is parity between India's educators and educators from VUSSC nations, many of which are currently classified as low-income, or developing countries. For example, both use OER as classroom assets and optional/compulsory student learning materials to a much greater extent than do the OpenLearn- and Saylor.org-using educators. In addition, the Indian and VUSSC educators show much greater use of OER for pedagogical development, for increasing educational inclusion, and for subject-related development. Possible reasons for this include a scarcity of high quality learning materials and pedagogical development resources in countries such as India and many of the VUSSC nations and, for India's school teachers, the need to engage children (especially girls) whose families may not value their education and would prefer them to stay at home helping with household chores and the care of siblings, or to bring in an income (Ministry of Human Resource Development, 2014, pp. 44–48).

Again, answers to an open question about the Indian educators' reasons for OER use add clarity to the quantitative data. Educators' comments about their reasons for using OER included:

> 'For wider reference base for my researches and publications/ sessions.'
> '[Because] it is easily accessible to all without boundaries.'
> 'For making teaching-learning experience more lively and effective for my students and faculty.'
> 'To help network with other people with similar domain interests, (as an OER curator) to help promote the culture of open/free sharing and collaboration.'
> 'I can have access to the best teachers with varying perspective/analogy towards a topic at hand.'

The 78% of Indian educators indicating that they use OER to compare others' teaching materials with their own in order to assess their materials' quality suggests that using OER can lead to educator reflection and pedagogical change. Indeed, the data collected on the outcomes of educators' OER use (see **Table 5**) show that 77% of the Indian educators feel that using

| | | Indian educators | VUSSC | OpenLearn | Saylor.org |
|---|---|---|---|---|---|
| OER used for pedagogical development | To prepare for my teaching/training | 92% | 98% | 62% | 53% |
| | To get new ideas and inspiration | 96% | 98% | 77% | 72% |
| | To supplement my existing lessons | 90% | 90% | 55% | 51% |
| | To compare them with my own teaching materials | 78% | 70% | 42% | 22% |
| | To broaden the range of my teaching methods | 89% | 85% | 62% | 36% |
| OER used to increase educational inclusion | To engage my students more fully in a topic area | 83% | 83% | 48% | 26% |
| | To make my teaching more culturally diverse | 78% | 65% | 40% | 22% |
| | To interest hard-to-engage learners | 69% | 50% | 38% | 19% |
| OER used as materials for learners | To broaden the range of resources available to my learners | 93% | 86% | 51% | 31% |
| | As 'assets' within a classroom lesson | 83% | 87% | 41% | 19% |
| | To give to learners as compulsory self-study materials | 50% | 55% | 22% | 17% |
| | To give to learners as optional self-study materials | 86% | 71% | 41% | 29% |
| | To provide e-learning materials to online learners | 74% | 60% | 26% | 21% |
| OER used for subject-related development | To stay up-to-date in a subject or topic area | 98% | 90% | 65% | 46% |
| | To learn about a new topic | 96% | 89% | 67% | 55% |
| Other | To enhance my professional development | 98% | 94% | 65% | 53% |
| | To connect with teachers with similar interests | 74% | 56% | 37% | 20% |

**Table 4:** Comparing Indian educators' aims for using OER with those for other educators in the OERRH dataset.

| | Indian educators | VUSSC | OpenLearn | Saylor.org |
|---|---|---|---|---|
| I have broadened my coverage of the curriculum | 80% | 80% | 66% | 55% |
| I use a broader range of teaching and learning methods | 76% | 86% | 61% | 56% |
| I have improved ICT skills | 65% | 78% | 35% | 40% |
| I make use of a wider range of multimedia | 65% | 83% | 46% | 50% |
| I make more use of culturally diverse resources | 63% | 52% | 44% | 41% |
| I have a more up-to-date knowledge of my subject area | 78% | 87% | 63% | 60% |
| I reflect more on the way that I teach | 77% | 80% | 58% | 53% |
| I more frequently compare my own teaching with others | 57% | 41% | 41% | 39% |
| I now use OER study to develop my teaching | 73% | 54% | 51% | 44% |
| I collaborate more with colleagues | 51% | 56% | 30% | 36% |

**Table 5:** Comparing the outcomes of OER use on India's educators with that for other educator groups in the OERRH dataset.

OER has led to their reflecting more on their teaching and 76% say they use a broader range of teaching and learning methods as a result of using OER (again higher than the OpenLearn- and Saylor.org-using educators, but showing parity with the VUSSC educators).

***Exploring formal learners' use of OER in more depth***

Formal learners comprise 30% of the Phase 1 survey sample and their responses offer some valuable evidence about the potential of OER to improve study performance and satisfaction. The surveyed formal learners are

largely studying full-time, face-to-face (70% of formal learners) and in the higher education sector (80% of formal learners). The top six reasons that formal learners use OER are:

- Professional development (97%)
- To improve study skills (97%)
- In connection with formal studies (94%).
- Study related to work or business (89%)
- To try university-level content before signing up for a paid-for course (81%) – offering further evidence that OER can function as a bridge to formal learning (see Perryman, Law and Law, 2013).
- To improve their non-native language skills (62%).

**Figure 8** shows Indian formal learners' perceptions of the impact of OER on their studies, in comparison with the responses of other formal learners in the OERRH dataset. The data show that while the Indian formal learners are not as positive about the impact of OER on their studies as are the VUSSC formal learners, the Indian learners are much more positive about OER impact than are formal learners using OpenLearn and Saylor.org, across nearly all categories of study performance and satisfaction shown in **Figure 8**.

## Discussion

This pilot study has raised questions about levels of engagement with OER in India. Some indicators put India ahead of the global average (for example creating OER and publishing content under a CC licence). In addition, the collected qualitative data indicates the impact of OER in changing educators' attitudes towards openness and resource-sharing. However, responses to the open questions in the pan-India survey also reveal OER are largely valued for being free and convenient over their being infinitely adaptable resources that can be re-published. One educator commented: 'By using OERs. . . educators and institutions can avoid postal delay, errors in printing of material, problems due to quality of paper etc.' A formal learner explained: 'It reduces the weight of the books we carry! We just send files through internet to those who are needy of this.' Another added:

> Yes, open educational resources are easy to use. I need not visit any library to search for any specific content or necessarily buy books. Using OER I get information from multiple sources in one go. I can save them, read it offline, share it with anybody. The best part is I just need to carry my laptop around. No need of carrying hardcopies of books, journals etc. It's very convenient to use OER.

**Table 6**, showing the appeal of OER for the three categories of respondent, gives further weight to this argument.

In addition, cross-referencing the survey findings regarding length of time respondents have used OER (**Figure 5**), and the types of OER used (**Figure 6**) reveals a conundrum – the fact that although 25% of respondents completing the General survey indicate that they have never used OER, 85% General survey respondents say that have used Ted Talks. One explanation could be that some survey respondents are uncertain about the sorts of resources

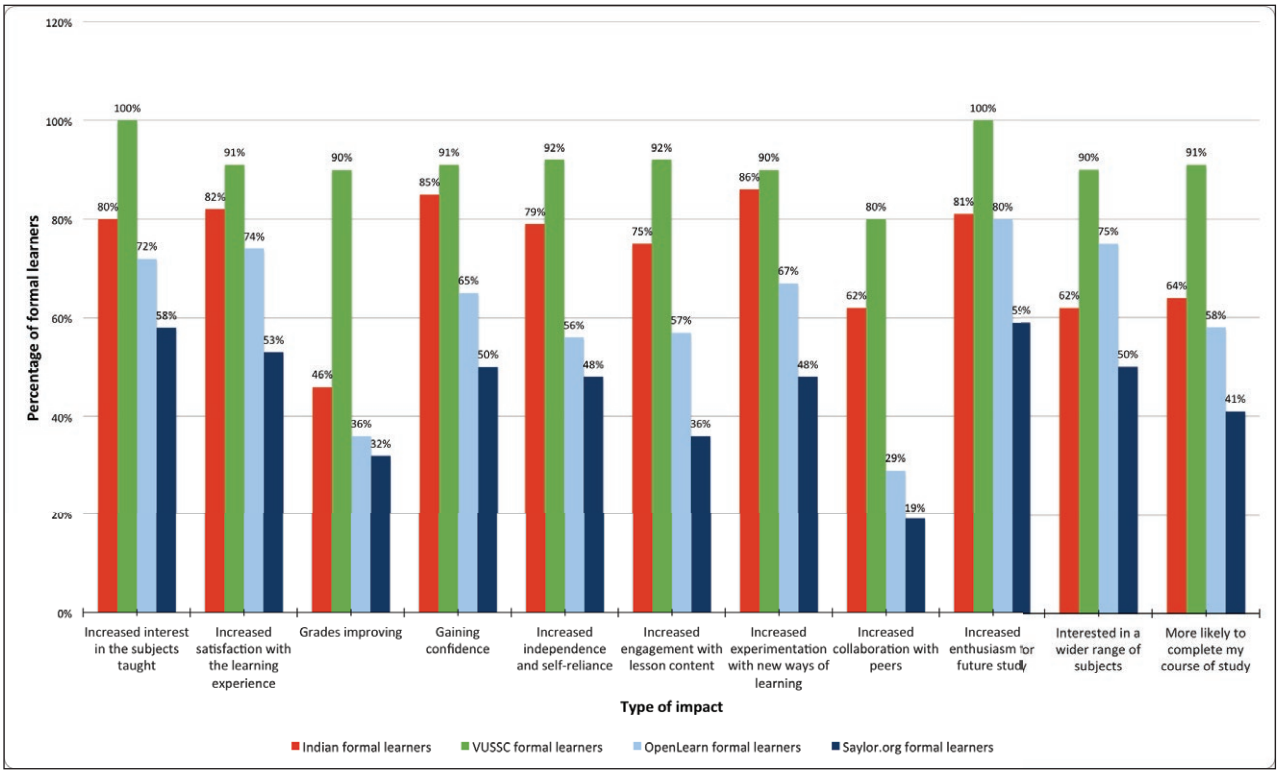


**Figure 8:** Formal learner perceptions of the impact of OER on their studies, comparing responses from the Pan-India, VUSSC, OpenLearn and Saylor.org OERH surveys.

| | Educators | Formal learners | Other |
|---|---|---|---|
| I can study at no cost | 85% | 94% | 80% |
| The materials can be used flexibly | 94% | 97% | 80% |
| The materials can be accessed at any time | 97% | 100% | 87% |
| The materials can be studied online | 96% | 97% | 90% |

**Table 6:** The appeal of OER.

that might be identified as 'OER', not really understanding what the term actually means. Relevantly, Perryman et al. (2014, p. 5), studying OER localisation connected with the TESS-India project (http://tess-india.edu.in/), observed that most members of a group of Indian OER localisation experts 'appeared to lack an understanding of the notion of openness and the concept of an infinitely adaptable resource that can be changed by teachers to meet their own needs'.

Further cross-referencing the barriers to OER use experienced by the pan-India survey respondents with the collected data regarding the types of OER these people use may also help explain the popularity of YouTube and Ted Talks videos across all respondent groups (see **Figure 6**). 44% of educators, 50% of formal learners and 20% of respondents completing the General survey indicate that 'not being skilled enough to edit resources to suit my own context' is a barrier to their use of OER. This apparent lack of skill may combine with a lack of access to the sophisticated ICT equipment needed in order to create and edit videos in accounting for the popularity of video-format OER. Furthermore, the 'lack of editing skill' barrier might help explain why, although the pan-India survey respondents create and publish OER more extensively than their peers in the Global North, they are slightly less likely to adapt OER than those peers (see **Figure 7**).

The survey findings regarding the pan-India survey respondents' OER engagement and OEP can usefully be mapped against Wild's (2012) OER Engagement Ladder. Wild (2012) identifies characteristics of behaviour that link to levels of engagement in OER and offers a model using a ladder metaphor (**Figure 9**) to identify levels of OER engagement. Mapping the OER engagement findings of the Indian survey respondents against Wild's ladder model reveals their level of engagement as mostly 'low'. However, Wild's model does not allow for consideration of contextual factors that may either enable or inhibit OER use particularly in development contexts.

**Figure 10** shows the barriers to OER use experienced by the pan-India survey respondents. It reveals a more nuanced picture of Internet connectivity than may initially be apparent from **Figure 4**, suggesting that while basic access to the Internet is high amongst the respondents, this does not necessarily equate to a reliable, always present, fast connection. Indeed 76% of educators and 83% of formal learners suggest a slow Internet connection is a barrier to their using OER. However, this situation is gradually changing and although there are conflicting statistics on the exact number of Internet users in India it is clear that there is an exponential trend in access to the Internet (see, for example, iamWire, 2015; internet live stats, 2015; Kemp 2015). The current Indian government is very active in promoting access to/use of technology and the Internet (Digital India, 2015) and it is likely that future surveys of similar types of respondents to those featuring in the Phase 1 study would show a significant reduction in people identifying Internet connectivity as a barrier to the use of OER.

### *A new model*

We are currently developing a new model intended to better capture the rich contextual factors inhibiting and enabling OER use and OEP in the Global South. For Phase 1 of our research we have limited the model to covering technical inhibitors to OER use, for example poor/no Internet connectivity and lack of computer access. **Figure 11** shows the emergent model. Quadrants A and C are generally representative of the Global North-specific OER engagement ladder (Wild, 2012), grounded in more enabling factors than inhibitors (for example fast, reliable Internet access and continuous electricity), and with movement from C to A showing progression to a greater engagement with OER. In order to more widely represent what might be considered 'true' OER engagement in both the Global North and South we have added quadrants B and D, which acknowledge the impact of inhibitors such as slow/unreliable Internet access.

**Figures 12, 13** and **14** show the data from the three surveys mapped against our emergent model. The size of each circle indicates the percentage of people showing a particular level of engagement and inhibitor(s). The colour indicates the type of OEP being assessed, as shown in the legend accompanying each model. The figures cover three technical inhibitors identified as barriers to OER use:

- Slow Internet connection
- No Internet connection
- No access to a computer

The size of the circle signifies the percentages that fall within the category of low, middle or high. The level of inhibiting factor is derived from survey respondents' answers to the 'barriers to OER use' question, as follows:

- High – Survey respondents who reported all three as challenges
- Medium – Survey respondents who reported one or more of these challenges
- Low – Survey respondents who did not report any challenges

In most cases, 3 circles link to the related OEP question.

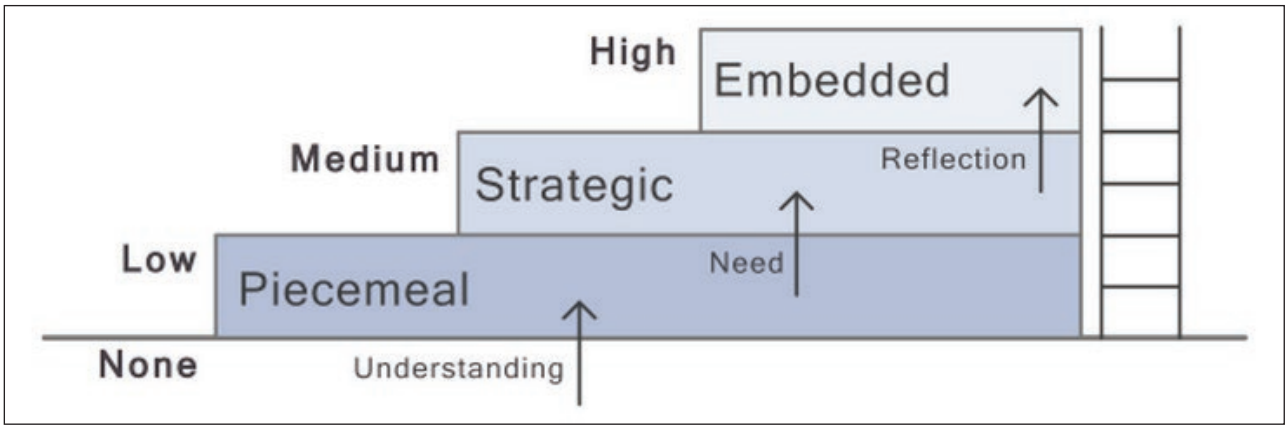


**Figure 9:** OER Engagement ladder (Wild, 2012).

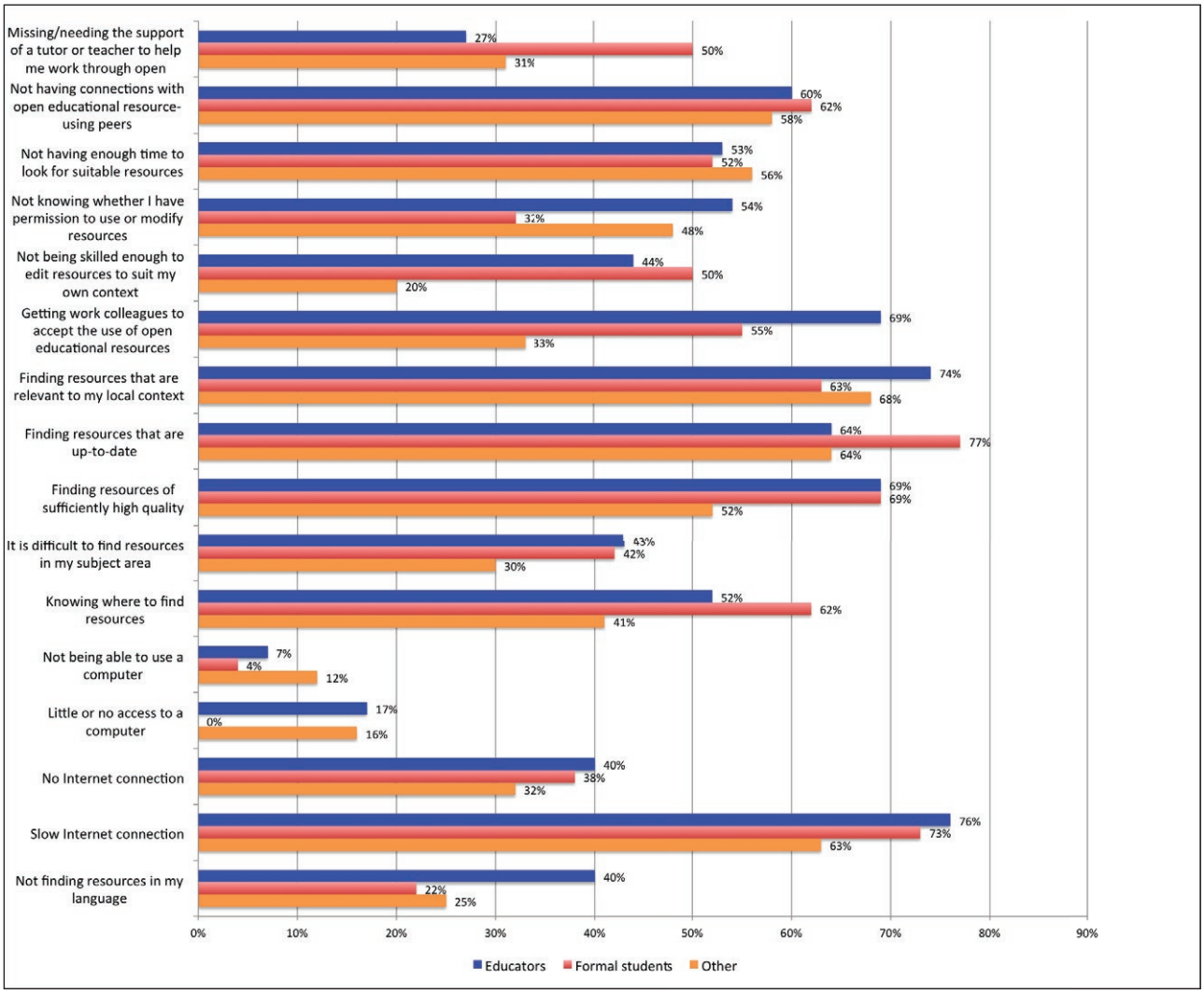


**Figure 10:** Barriers to OER use experienced by the Pan-India survey respondents.

Looking at **Figure 12**, we can see that a significant number of General survey respondents adapt OER *and* experience significant inhibitors in terms of Internet connectivity and computer access. Overall however, General survey respondents show limited engagement with OER and a fairly even spread of inhibitors to OER use.

**Figure 13** indicates that educators show greater engagement with OER and more extensive OEP than respondents completing the General survey. However, educators also appear to be experiencing greater inhibitors to OER use than the General survey respondents. The proportion of educators in quadrant B is particularly impressive, showing fairly high engagement despite a similarly high level of inhibitors.

**Figure 14** shows that formal students have the highest level of engagement with OER of the three respondent

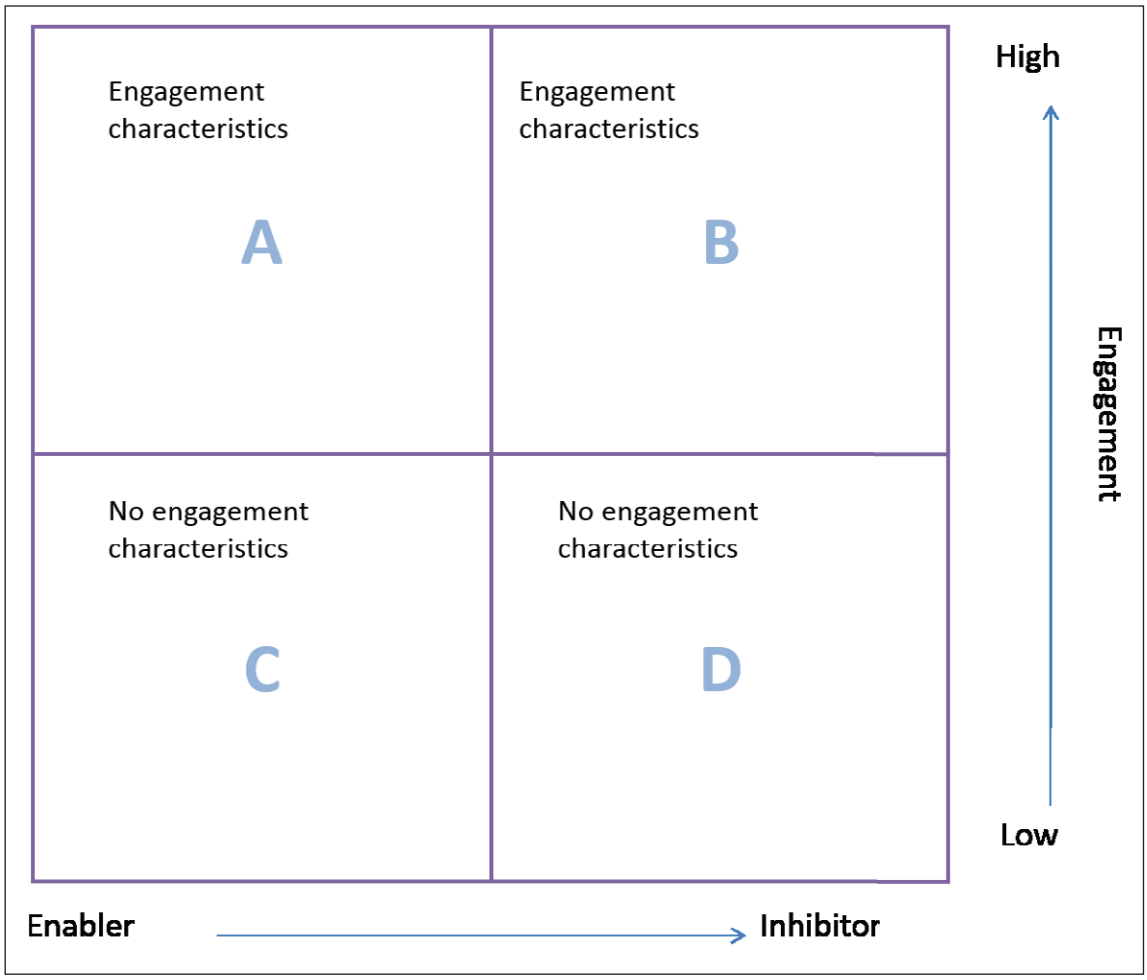


**Figure 11:** Emergent model for understanding engagement with OER in a development context.

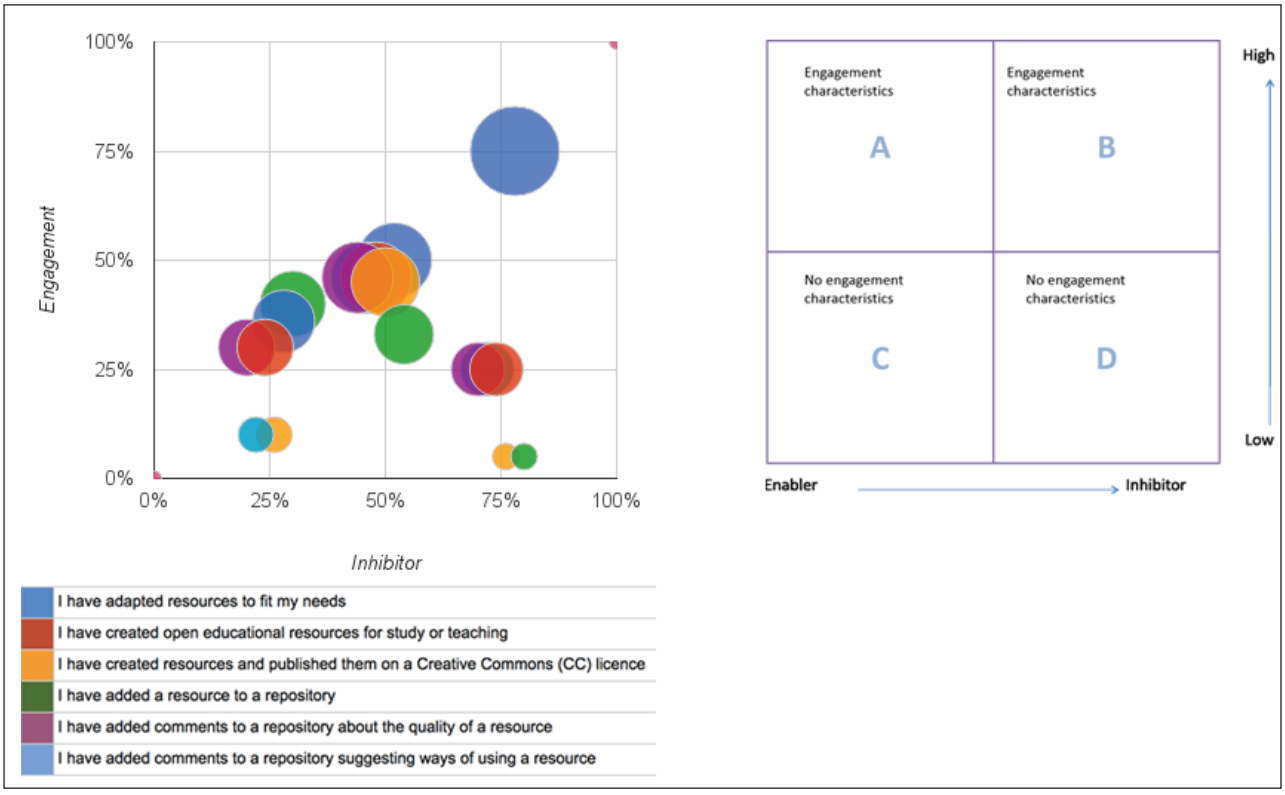


**Figure 12:** Mapping the General survey respondents onto the new model.

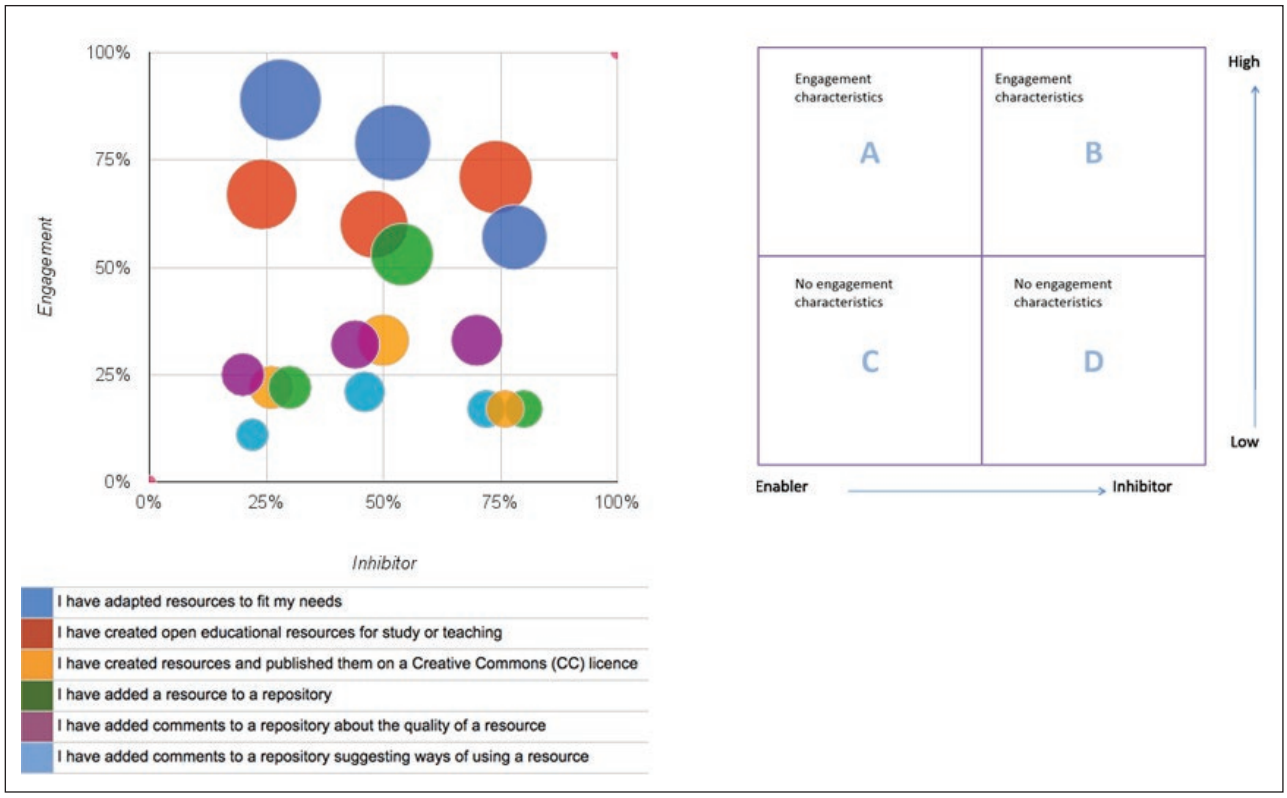


**Figure 13:** Mapping the Educator survey respondents onto the new model.

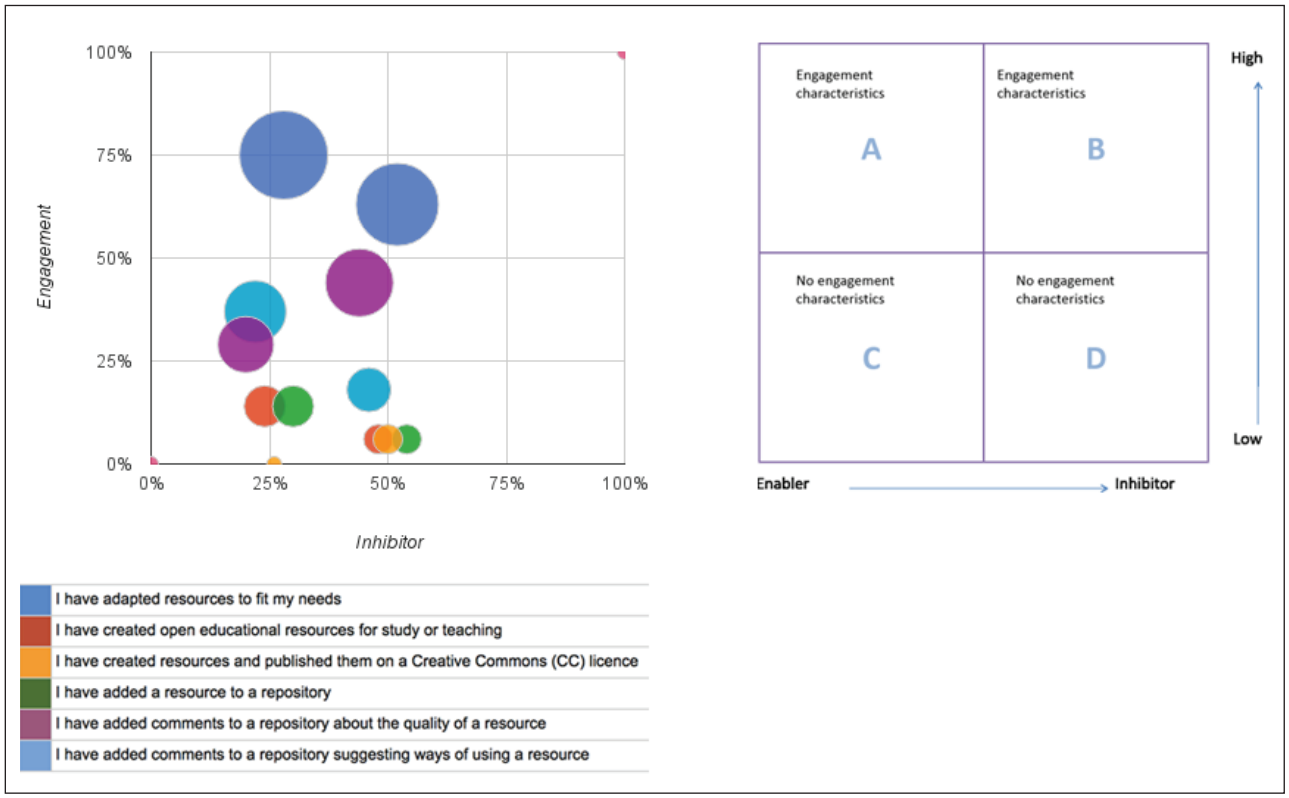


**Figure 14:** Mapping the Formal Student survey respondents onto the new model.

categories, together with the lowest level of inhibitors. This may be due to the fact that the surveyed formal students are generally younger than the educators and, of all respondents, appear to be the most engaged with online social activity such as forum and VLE use, and the most active in sharing and downloading content. This, in turn, may indicate that technology use is more embedded in formal students' everyday lives and, consequently, that when barriers exist formal students are more committed to overcoming them. Further research would be needed in

order to investigate individual case studies and make more extensive comparisons.

It seems reasonable to assume that results appearing within quadrants A, B and C of **Figures 12, 13** and **14** are reliable. However, the results in quadrant D require additional investigation in order to better understand the true nature and effect of the inhibiting factors. The model will be further developed in future phases of our research to cover other inhibitors that may impact on OER use and OEP in India, as identified in Perryman's (2013a) study of the potential of OER in Indian teacher-education system, for example attitudes to expertise and to sharing, ICT skills, and differences between the social and professional use of ICT.

#### *Future research and refinement of the survey*

The Phase 1 research has resulted in our identifying areas of the three surveys that could usefully be fine-tuned to better achieve our aims in future phases of the research study. For example, although the pilot survey was dual language 96% of respondents indicate that they speak English and only one respondent wrote open question answers in Hindi script. In addition, several respondents commented that they would have preferred a less cluttered, English-only survey. We therefore plan to offer two versions of the survey in future – one English and one Hindi.

We have also realised that to fully understand the potential of openness in India we will need to fine-tune some of our survey questions to allow us a more nuanced view of the inhibitors affecting OER use and OEP. For example, we need to find out more about:

- Whether slow and unreliable Internet connections make certain types of OER particularly problematic to access;
- Whether differences in the amount and location of Internet access available to survey respondents affects their use of OER;
- Respondents' level of digital literacy and their attitudes towards ICT use at work *and* for leisure, following research by Perryman (2013a) and Chattopadhyay (2010, p. 7) who report that even when Indian educators are using Web 2.0 tools such as social media for social/leisure reasons they can remain reluctant to integrate these tools within their teaching and professional development.

We also intend to broaden the respondent-base for our research in Phase 2 of our study to include non-OER users, in part by disseminating hard copies of the survey in addition to the online version. We hope that this will help us to see beyond the current, relatively digitally literate sample and to reach people who are experiencing barriers to engagement with openness that we have not covered in this paper. Future phases of our research will also feature a more democratic selection of research methods including interviews, focus groups and participatory action research (see Popplewell and Hayman, 2012) in order to combine the generalisability that is possible with quantitative studies with the rich understanding of human experiences that can be gained through the use of qualitative research methods. While our own research is limited to an Indian context our emergent model could be applied to a much broader range of development settings, for example the countries currently being researched by ROER4D (http://roer4d.org/).

## Conclusion

To date, the pan-India survey findings have shown how and why a quite tightly defined group of well educated, ICT literate people are using OER. In addition, the people in our sample exhibit more extensive evidence of OEP, in terms of their creating, sharing and commenting on open resources, than do the educators, formal and informal learners from developed countries that feature in the OERRH open dataset. This level of OEP engagement is particularly notable as, despite being well-educated and ICT literate, the pan-India survey respondents still encounter greater technical and structural barriers to OER use than those typically experienced by OERRH survey respondents from the Global North, including slow, bandwidth-limited and unreliable Internet connections, restricted access to ICT equipment, and lower levels of digital literacy than their peers in the Global North.

A key outcome of this study is the reworking of Wild's OER Engagement Ladder to be more appropriate to understanding OER use and OEP in the Global South, acknowledging clear disparities in the priorities and possibilities that exist in development and non-development contexts. Modelling the relationship between barriers and engagement has allowed us to better understand the differences between formal students, educators and other categories of survey respondent in this respect and has given us a foundation for more extensive research into the potential of openness as an agent for achieving social, economic and educational freedoms in the Global South. We hope that our model can also be the basis for others to gain deeper contextual understanding of OER engagement in specific development settings.

In indicating the appetite for OER and OEP amongst our Phase 1 sample, our research confirms the value of conducting a more nuanced study of how India is engaging with openness, and the contextual factors inhibiting and enabling OER use and OEP in the Global South. For example, it would be worth further investigating the responses of those respondents falling within quadrant B of our model in order to fully understand the nature of their engagement with OER. In addition, demographic factors such as age, gender and education would be worth considering in terms of their impact on OEP as our existing evidence gives some indication that differences in behaviour may be connected with such factors, for example the contrasting practices of educators and formal students.

The conclusions drawn on the basis of our research have the potential to inform future development of OER for use across India's various education sectors. The findings have relevance more broadly in contributing to an understanding of the nuanced contextual factors that inhibit and enable open educational practices both in the Global North and the Global South and, as such, should be of

value to policymakers, funders, educators and students in developing strategies for supporting engagement in OER.

## Competing Interests

The authors declare that they have no competing interests.

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