Teachers' professional learning during and after Covid: A role for open digital badges

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A route to achieving successful TPD at scale

Executive Summary

Continuing Teacher Professional Development (TPD) gives teachers the opportunity to improve, adapt and innovate their classroom practice. Never has it been more critical than in helping shape the educational and societal response to the Covid-19 pandemic. Whilst such disruption can be disorientating, we also find new practical and conceptual spaces opening up. We find ourselves asking how well-suited existing TPD models are and what new approaches should be considered. In India alone it is estimated that over 400 million hours of TPD will be required to meet the aspirations of the 2020 National Education Policy. The emerging challenge is one of achieving successful, widespread, and applied TPD at scale – and indeed at many scales. In this report we consider the case for using digtial badges in this role.

Open digital badges have become recognised globally as a means for structuring, recognising, rewarding and monitoring professional learning. In many countries badges are little used in TPD at present, but in the workshops we have held with senior government officials, teachers and teacher educators, in the two pilots we have completed, and in our new project based in Assam, we have seen how digital badges can have roles to play. Our work and that of many other studies, tell us that open badges (digital badges that conform to international open standards) can offer:

Modularity: badges can reward relatively small, short or standalone achievements and as such can give status and recognition to short local programmes. With the right design, these can become modular building blocks towards larger units of award or achievement, such as 50 hours professional development per year. Breaking down requirements into manageable steps could better fit teachers' busy roles. The ever-growing range of badges offered, often for free, by international organisations could be integrated into local, regional or national initiatives.

Flexibility: open digital badges have huge 'pedagogic flexibility' as they can be awarded for almost anything that can be evidenced and assessed – from specific competencies, achievements, learning outcomes and new pedagogic practices to much larger certification or credit. Local or regional state authorities or community groups can create and issue badges directly and, with the correct application, badges can be retrofitted to existing courses.

Clarity: a requirement of every open digital badge is that the creator must state the criteria required for awarding. It supports greater transparency of standards, gives clarity to teachers about what they must do and why, and forces creators to properly reflect on and articulate learning objectives.

Scaleability: issued online with options for both an automated issue from digital learning platforms and more manual local batch-issuing, open digital badges could provide a common digital currency such that local, regional and national TPD systems can work in tandem.

Engagement: clear communication of what open badges are on offer can empower teachers to make choices based on their own learning needs and to build a stronger culture of service. Research, including data from our pilots in India, suggests badges may help promote greater engagement in course content.

Shareability: digitally owned by those who earn them, digital badges can be shared and shown to others. This can help build confidence, self-esteem, and community recognition while proving helpful in career management and progression. Administration of TPD progress and future planning would also benefit from the digital record created by the issuing of open digital badges.

These six fundamental affordances could help focus and drive the implementation of large-scale open digital badge use for TPD in India. There are challenges too, but with a collective energy, sound practical application, and ongoing research, these are not insurmountable, and supplementary benefits (such as increased digital proficiency or more co-ordinated governance) may emerge.

1. Situating open digital badges

In this report we outline activities and findings from a knowledge exchange partnership of academics from the The Open University, UK (OU) and Tata Institute of Social Sciences, India (TISS). This includes preliminary findings from two pilot interventions in which digital badges were used to support courses that had been adapted in response to the Covid-19 pandemic. Our goal has been to understand the perception and value attached to digital badges and to contribute to discussions that can frame emerging narratives and practice.

Digital badges offer educators a unique combination of affordances. When applied to the domain of Teacher Professional Development (TPD), this technology appears to present a compelling proposition, yet it is not without challenges. There is a pedagogic flexibility to digital badges because of their focus on smaller, more bounded units of learning and assessment and the open and accessible way that they can be created, awarded, managed and shared, and the way groups or collections of digital badges can be developed.

The Mozilla Foundation has outlined an open standard for digital badges in education, defining a badge as a 'digital credential … earned by an individual through specific projects, programmes, courses or other activities'. However, the educational value of using badges extends beyond that of a digital credential, with research indicating value for goal-setting, supporting more personalised learning routes, heightening motivation, promoting deeper learning experiences, building confidence, increasing learner appreciation of their achievements, demonstrating commitment to learning and taking greater control over how learning is curated and represented in public (Gamrat et al., 2014; Gibson et al. 2015; Lijanagunawardena et al., 2017; Facey-Shaw et al., 2018). By 2016, education (along with business) was the leading sector offering digital badges in North America (Fong, Janzow & Peck, 2016). Globally, interest in open digital badges for primary and secondary school teacher professional develop-ment is growing. At the local scale, school districts, training providers and universities are developing badge collections and constellations, at the national level, platforms such as Digital Promise in the US offer a portal to find badges from a range of providers. Others are focused on developing means to check the authenticity of digital credentials. However, research evidence remains relatively scant (Brauer, 2020; Randall & West, 2020).

In many countries such as India where our study is based, digital badges are little used in TPD. As a consequence, it is vital that policy makers, educators and practitioners make time to consider the benefits, routes to effective use, and the structural and logistical challenges. Open digital badges represent a portable 'packaging' of key assessment information associated with their implementation, such as who has earned it, the assessment criteria, evidence from the learning activities completed, and who the issuer is. This offers the potential for a more traceable process, a greater variety of assessment and quality assurance processes, open scrutiny, and the ability to use digital badges in combination as micro-credits from which to build more substantial certification.

As a distinct educational technology, open digital badges could work well in micro-learning contexts (such as short courses or training), in supporting the assessment and demonstration of skills in practice-based and non-conventional situations where other assessment methods are inefficient or unworkable. They also offer scalability if coupled with automated systems of assessment, and are open to local adaptability. Yet whilst the practical process of setting up basic badges may seem straightforward (Clements, West & Hunsaker, 2020), learner and issuer motivations are nuanced and complex, meaning care is needed to ensure that the badge has a clear and authentic learning rationale and that it will add value to the learner, their learning experience, and their professional practice.

2. Introducing our project

Not enough is known about how the combination of affordances offered by open digital badges could operate and combine to support TPD in low- and medium-context countries. Different education systems, teaching cultures and practice-challenges will necessarily impact on how badges are understood and used.

Led by a partnership of academics from the Open University, UK (OU) and Tata Institute of Social Sciences, India (TISS), our project builds on expertise in online learning, teacher education and digital assessment to deliver the following three key aims:

Project aims

1. To hold events to stimulate practice and policy debate (Section 4). The project team held a two half-day online events titled 'Emerging Opportunities for Digital Badges in TPD in India' in November 2020. The first day was open to all, and over 350 teachers, teacher educators, faculty staff, and government adminstrators registered to attend. It comprised presentations, a workshop, discussion groups and a plenary session. The second day was attended by invited delegates with strategic or policy roles and comprised presentations, panels and small-group discussions. Feedback gathered from the event will be analysed and used in the development of a context appropriate digital badge framework.

2. To use two pilot interventions to understand more about how teachers in India respond to open digital badges and how a contextually appropriate framework for badge use could be designed (Sections 5). The project has successfully piloted the use of digital badges with in-service and pre-service teachers in two scenarios. The first was a short course titled 'Technologies for Online Learning in School Education' and the second was a Community of Practice for supporting M.Ed. students. To achieve this, the project team had to create the badges and the social and technical environment in which they were to operate. This included: using a model that foregrounded learning design to help determine what each digital badge would be awarded for; instigating a programme of technical development to enable TISS's virtual learning environment (VLE) to track and award badges; communications protocols; a research instrument to evaluate responses to the badges. Separate sections of this report discuss each intervention and report preliminary findings.

3. To build implementation expertise relevant for application in future projects. A joint team comprising staff from the OU and TISS have worked together for 18 months to discuss, develop, and explore the implementaton and conceptual challenges for using open digital badges in India. There has been sustained interaction with teacher particpants and developers, and analysis of survey findings (Section 6), VLE logs, forum posts, etc. This experience has helped the project team secure further funding for a new project which aims to offer short digitally badged TPD modules to teachers from schools in Assam. These courses will focus on technology-enhanced appoaches to learning following the disruptions and emerging challenges of the Covid-19 pandemic.

3. Project background

In January 2019 The OU team conceived and ran a workshop in New Delhi, India, with the aim of exploring how digital badges might be used to support, capture and validate changes in teachers' classroom practice. The event was attended by 14 delegates – all senior educationalists – from three Indian states who had been involved in some capacity in the TESS-India teacher development programme.

The workshop, which was led by researchers from the UK and India, began by introducing participants to the concept of open digital badges, their creation and use, with examples of their application. An important aspect of our approach was to argue that badges have the potential to deliver critical formative as well as summative functions, and to take a holistic view of badge implementation (see p.10 for further reading).

Participants were then invited to draw on the TESS-India OER to design a short online in-service teacher professional development course to support movement towards the more participatory approach advocated in educational policy. As part of this course design process, they were encouraged to propose digital badges to recognise changes in teachers' pedagogic practice. They were free to decide which area of practice to focus on and which competencies would be badged, as well as the length of course and study time required each week.

An analysis of evidence captured during the event revealed the following:

First, all groups recognised the teacher's own classroom as a site of professional learning, reflecting an important shift away from traditional cascade-type training and off-site workshops commonly seen in India.

Second, within the learning designs there was an acknowledgement of teachers taking responsibility for their individual learning pathways. Recognition that teachers have differentiated learning needs

requiring distinct forms of support represents a significant closing of the gap between the rhetoric of policy and enacted practice in much teacher education in India and an opportunity for digital badges.

Third, and somewhat in tension with the first finding, we observed that participants tended to isolate knowledge of learning strategies or concepts (as assessed by a 'knowledge' badge) from pedagogic practice (as assessed by a 'practice' badge), rather than linking these together. Through the examples of 'reflective' badges, it was clear that participants valued reflection on both theory and practice. This has not historically been integral to the Indian teaching profession.

Lastly, participants proposed a greater range of assessment methods than is currently being employed as evidence for teacher learning. How this evidence might be assessed at scale – whether through peer rating, random sampling by teacher educators or assessment by a trusted local educator (e.g. the headteacher) – was not resolved in the workshop.

The workshop revealed considerable enthusiasm for digital badges, while also suggesting that the process of defining them may be helpful in prompting teacher educators to pay attention to – and potentially disrupt – their existing understanding of teacher learning and practice in a number of important ways. For more about the event and research findings visit: http://oro.open.ac.uk/69896

Project initiation meeting in Mumbai

Following the success of the New Delhi workshop, the OU team secured Global Challenges Research Funding funding for an 18-month project in partnership with colleagues at TISS. The OU project began in Summer 2019 with a visit to Mumbai and since then regular online meetings facilitated knowledge exchange and helped the team identify two candidate pilot interventions.

4. Emerging Opportunities for Digital Badges in TPD in India events

Day One: a focus on practice

On 25th November 2020, the OU and TISS project teams hosted Day One of an online event at which practitioners were invited to reflect on and discuss opportunities for using open digital badges to support TPD in India. The event was attended by 90 teachers, teacher educators and government officials from over 12 states and the recording was watched many more times over the following 24 hours.

The event introduced the concept, features and common arguments for and against digital badges. While some delegates had earned or used digital badges it was a comparatively new concept to most.

> *"[Badges make] an articulation of outcomes and outputs and mak[e] explicit the learning."*

Sessions included:
- An introduction to the concept, pedagogy and potential of digital badges
- Contextualising digital badges in teacher education and teaching in India
- Exploring the role of digital badges
- Implementing digital badges at TISS: views from course leaders and learners
- Receiving and sharing digital badges: a hands-on demonstration

	Strongly agree or Agree Positive impact (n=26)
Motivating teachers to undertake more professional development	92%
Helping teachers monitor and reflect on their learning achievements	92%
Increasing the status of teaching as a profession	80%
Improving classroom teaching practice	88%

Everyone responding to the post-event survey enjoyed the event (n=26) and 96% found it informative and were excited about the emerigng opportunities for digital badges. However, some said they were concerned about potential barriers to using digital badges for TPD in India.

> *"[Badges are] a nice way of recognising teachers' micro skills"*
>
> *"It helps increase our identity as a teacher struggling for professional development."*

The majority of those responding to the survey believed that digital badges could have a positive impact on teaching and TPD. In particular, most agreed that badges could have a positive impact on motivating teachers to undertake more professional development, the status of teaching as a profession, and classroom teaching practice. While it is likely that this group were self-selecting (they may well have chosen to attend the event because they were already positively predisposed towards digital badges) these data are encouraging.

The majority of respondents agreed that either the state or national government should take steps to offer digital badges for TPD. Those who disagreed were almost all from one particular state and it is uncertain why they took this conflicting view (perhaps it reflects specific local circumstances or a misinterpretation of the question).

'Should your state or national government offer digital badges for TPD?'

- Yes — 57.7%
- No — 19.2%
- Not sure — 23.1%
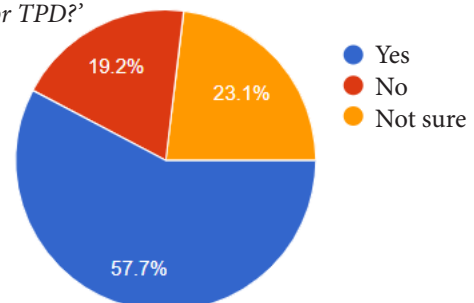
Day Two: a focus on policy

Day Two of the event was attended by 40 participants from various settings, including representatives from government and the ministry of education, and representatives from the Tata Trusts and Universities. The event focussed on the role of digital badges in delivering policy goals and improving the quality of teaching practice in Indian schools.

The event opened with a concise overview of digital badges and summary of findings from the two project pilots (as outlined earlier in this report). This was followed by a round table discussion by an invited panel of experts comprising: Director, Department of School Education and Literacy, Ministry of Education; Director, Central Board of Secondary Education; Head, Dept of Teacher Education and Coordinator, NCERT; Commissioners Office, Navodaya Vidyalaya Samiti; and Principal Secretary (Elementary and Secondary), Assam.

Panel members discussed: best practice, innovations and mitigations around supporting teacher motivation, recognition and career trajectory, the value of badges in helping close the learning loop, signifying achievements instead of a conventional certificate, utilising badges as part of larger-scale activity (such as a portfolio or award), and supporting choice and career specialisation. The challenges of maintaining a fine balance between teachers' autonomy and accountability, raising awareness and building digital badge literacies (such as the digital skills necesary for managing badges), and the design, implementation and quality assurance of effective badge for TPD programmes were also highlighted.

Four key enablers for digital badge uptake that emerged from discussion over the two days can be summarised as:

1. The importance of leadership in establishing a culture of digital badge use: delegates often mentioned the critical role that vision, leadership and management must play in creating an operational framework and context for the use of digital badges for TPD. This would require policy intervention and support from government officials, effective definition of scope, and their administrative acceptance.

2. The challenges of uptake due to existing inequalities in digital skills and access: delegates mentioned various issues relating to the digital divide and poor digital skills or access that could prevent use of digital badges and the use of inclusive assessment criteria so that all teachers can realistically earn the badge. One delegate suggested that introduction of digital badges could be used to support improvements in the digital literacy and teaching skills required for earning badges.

3. Practical considerations of running digital badge programmes: delegates spoke about practical issues such as the cost of assessing submissions and deciding whether a badge should be awarded.

4. Requirements for adequate technical infrastructures: delegates higlighted potential technical issues, including the need for effective systems to manage authentication and issuing, and those associated with poor networks or computer facilitites.

5. Pilots initiated in response to Covid-19

Two uses of open digital badges were piloted by the TISS and OU teams in Summer 2020. These were initiated witthn a month of the Covid-19 pandemic restrictions first being introduced in India.

TOL01 course pilot

Our first pilot centred on integrating a digital badge into a course created specifically in response to the Covid-19 pandemic. Entitled 'Technologies for Online Learning in School Education' (hereafter referred to as the TOL01 pilot), the course was part of a wider initiative implemented by the Centre for Education, Innovation and Action Research (CEIAR) at TISS from May 2020. The course consisted of various online activities for both teachers and their pupils to help them in the transition to online learning.

The learning content for the first pilot (TOL01) was reversioned from existing course material and resources and released on the TISS-x VLE platform. The course began with an orientation webinar series for teachers and teacher educators about distance technologies for online learning, and was followed by an 8-10 hour course consisting of four units which covered various aspects of online learning: its history, how it can be used by teachers to enable active and collaborative learning among pupils on online platforms, how different kinds of assessment activities can be conducted, and how to use and curate Open Educational Resources (OER) during online teaching learning processes.

Development of the associated digital badge took place in parallel with the release of the course. Learners had to complete specific course activities at any time over a three month period to earn a 'Completer' digital badge. The original design of the TOL01 course did not have assignments that would support the automated issuing of badges, so the course team had to plan, write and set up detailed criteria for earning the open digital badge. This process involved following a design framework that was supported by the OU team wherein key learning design aspects such as learning outcomes, activities, assessment metrics, learning analytics and teaching intent were considered. Learners had to complete one activity from each of the four units to earn the badge (two activities in the case of Unit 3), which included two MCQ quizzes, one peer assessment and two narrative responses to claim the digital badge. This pilot gave us insights into the challenge of retrofitting badges to existing content and to using the requirements of open badge standards as an enabler to review and revise the learning design.

TALC community pilot

Our second pilot was intended to help support a community (TALC) formed by CEIAR to provide support for M.Ed. students (aspiring teacher educators) who wanted to continue their learning through the pandemic lockdown and share practices and ideas. TALC was initiated as an online group open to interested teacher educators who registered for the TALC 2020 webinar series. Synchronous webinar sessions were organised once a week between April and June 2020. Eminent educators from across the country were invited to speak on topics mapped on to the M.Ed. curriculum. Issues raised during the talks by participants and speakers were taken up for further discussions offline. The TALC community met for three weeks first before the concept of digital badge was introduced. Badges were intended to be a visual token of contribution and achievement as an improvement on a simple attendance certificate. Two badges were piloted – a 'Contributor' badge and an 'Explorer' badge.

The aim of the 'TALC Contributor' badge was to encourage learners to contribute actively to the TALC CoP. To earn the badge, evidence of sharing three posts with the community was required.

These posts had to demonstrate one or more of five activities such as posting a question or reflection relating to a relevant concept or practice, responding to questions posed by presenters or summarising learnings from a session.

The 'Explorer' badge was introduced later to promote the use of the resources disseminated by the webinar series. This comprised nine units of a course titled 'Introduction to Foundations of Education' that were made freely available on the TISSx platform. Unlike the first TALC badge, this was open to anyone, even if not part of the community. Learners were required to achieve a minimum total score for the quizzes to earn the digital badge.

Installing our open digital badges

Both pilots required digital badges to be retrofitted to an existing course design. The open digital badge specification requires clearly articulated assessment criteria so the pilot teams viewed this as an opportunity to review and develop their courses, clarify their learning outcomes, and adjust the associated assessment activities to better align with the digital assessment that badge awarding required. Implementing the digital badges put an obligation on teams to review and revise their course designs.

Open digital badges had never been issued by the TISS-x platform before so the team had to add new code to the VLE to automate the issuing process of open badges by the badge issuer (Badgr) and identify the learning anlaytics and assessment data that would be used to determine whether a badge could be offered. Improving the capability of the TISSx platform to issue badges was one secondary outcome of the project.

The graphics used for all three digital badges were created by TISS's graphic design team with reference to local house style and international examples. The following information was included in the badge

graphic: name of the course, statement of achievement (e.g. 'Completer'), year of issue, name (with logo) of the issuing organisation, and indication of the 'scale' of commitment and achievement by stating the respective length of the course.

One issue to emerge from the design process was that digital badges do not have a unique identifier code 'baked in' to the image. Whilst the assumption is that a digital badge image will only be used in digital media (and therefore will always manage to retain the embedded hyperlink for verification) there are many cases where a badge may become separated from its hyperlink. In contexts such as India where media move between paper and digital, some form of individual identifier could be added to the badge image to help verification and transparency. One idea we propose could be considered is the addition of a unique serial code or QR code.

6. Teachers' views on the role of badges

The pilots offered two contrasting implementations of digital badges. End-of-course surveys were used to learn about how teachers responded to the opportunity to earn a badge and uncover their views about future use of open digital badges in TPD.

A total of 90 learners received the TOL01 course 'Completer' digital badge during the three month study period. This represents the majority of those who completed all four units of the open online course, but a minority of those who registered. 20 participants of the TALC community were awarded the 'Contributor' digital badge, whilst 11 learners received the 'Explorer' digital badge. At this stage it is difficult to determine what proportion of active contributors applied for the TALC badge.

Participants in both pilots were sent an end-of-course survey that included five questions about how the digital badge was commnicated, how it had influenced their engagement in the course, and their perceptions regarding the future roles of open digital badges.
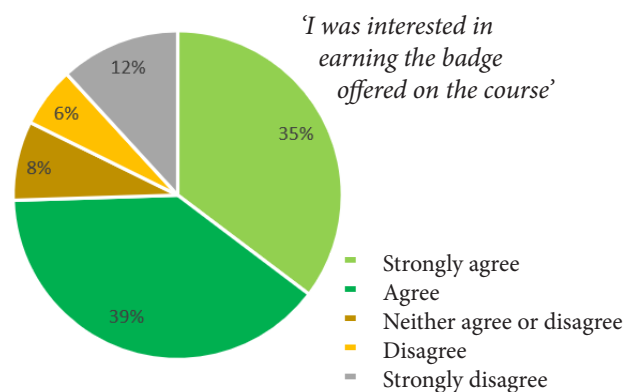
In total there were 114 responses: 55 from those participating in the TOL01 pilot and 59 from those in the TALC pilot. There was good representation from both teachers who completed the necessary activities to earn the badges (58%) and those who did not (42%). Most (around three quarters) had not heard about digital badges before the pilots, and a similar proportion agreed that the information provided about them by the project team was clear.

81% of respondents rated badges as having good or high value in encouraging them to undertake more professional development

Receiving an open digital badge was considered motivating by 75% of TOL01 participants and 51% of TALC pilot participants (see table right). Of note is that some of those who did not earn the TOL01 badge still said they found having it motivational.

Participants also reported that the offer of digital badges encouraged them to engage more deeply in the course activities. 55% of the TOL01 pilot respondents and 44% of the TALC pilot respondents reported that the badges prompted them to do activities that they otherwise would not have done. The majority of those who earned a badge responded positively to this question.

'[Receiving a badge] shows that I'm progressing in my professional development and it shows my active participation in the process of

'I was interested in earning the badge offered on the course'

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree

	Agree or Strongly Agree	
	TOL01 Pilot (n=55)	TALC Pilot (n=59)
I think digital badges could be useful to me in the future	82%	66%
I completed all the activities necessary to earn the 'Completer' badge	71%	46%
The badge prompted me to do things I otherwise would not have done	55%	44%
The opportunity to earn a badge helped encourage me to continue and finish the course	75%	51%

Most respondents thought that digital badges could be useful for their TPD in the future. 81% rated badges as having good or high value in encouraging them to do more professional development and learning, and 79% considered that they could be useful for sharing and discussing achievements with colleagues. Indeed, some respondents already had plans to share their success in achieving the badge, with one respondent writing 'I'm going to make it my profile photo'. As expected, the stronger support for using badges was from those who said the badges motivated or influenced their participation.

> '[Digital badges] for recognising learning and success from any part of an indivulas life, including achievements in both formal and informal settings not traditionally assessed, opens up possibility for people of all ages to share a more compete narrative of their personal identity.'

When asked to comment on the potential value of digital badges, respondents described a range of uses:

Self-monitoring of TPD by incremental steps: '*[Digital badges] are a useful analogy for pathways towards accomplishment because, while they can offer us some award over time, the emphasis is on the journey and not solely the destination.*'

Demonstrating progress in TPD: '*It shows I am progressing in my professinal development and it shows my active participation in the process of learning and motivates others to learn [from] such types [of] beneficial courses.*'

Building self-confidence: '*This will help me become a more confident and influential teacher*' and '*the achievements help to increase the self confidence.*'

Improving engagement: '*Student teachers were reluctant to express their views publicly on the discussion forum, lest it is judged, but digital badges will encourage them to participate with more reference and study...*'

Recognition and career progression: '*Digital badges add great value for learners as [they] serve as a recognition for online learning and helps learners to get their qualification or skills verified*', '*[Badges] will add weightage to career portfolio,*' '*they will help me in future to get promotion.*'

Motivation: '*The digital badge is the motivation and encouragement for completlng the course.*'

Sharing achievment: '*A digital badge that may be shared on platforms like LinkedIn may be useful to spread the word about our endeavours.*'

Use in own teaching: '*[I hope] to incorporate the concept of digital badges in my teaching-learning process*'.

Whilst most respondents were positive about the potential role of digital badges, these were opinions based on their early first experience. It is also possible that a postive association was greater because this was a new concept to most. A minority of around 15% of respondents were more circumspect and admitted to feeling it was too early to take a view or desiring more information about how they could be used or shared. One respondent considered badges unnecessary because the most important outcome was '[the] knowledge that I have gained.' We will undertake further analysis to examine responses in more detail with particular attention to distinct sub-groups of respondents.

7. Giving purpose to digital badges

As discusssed in the introduction, there are a variety of ways in which digital badge technologies can be utilised for TPD. The executive summary to this report outlines six key affordances (summarised in the figure below) that are relevant to and evidenced in the implementation of our pilots and the discussions held during our online events
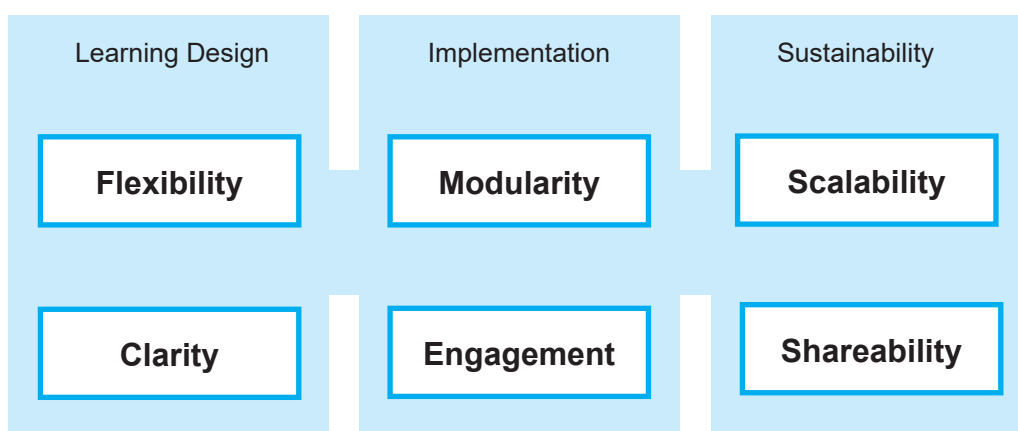
In our pilots, digital badges were generally well received by those who earned them. However, many who studied the course or participated in TALC did not earn or apply for a badge. In some cases this was expected because participation fell short of what was required of the badge - for example, the learner failed to complete enough posts or score highly enough in quizzes - and we have seen that badges did encourage some to complete who otherwise may not have), but in others there may have been uncertainty about the utility and value of the badge, a reluctance to engage due to an association of badges only with extrinsic motivation, or lower confidence in the digital skills necessary to learn and access the badges online.

The question 'What is a badge for?' has no easy answer, not least because open digital badges, like any form of assessment, can serve multiple and complementary purposes and because every culture has an inherited memory of what a conventional badge is, does and represents. The question does, however, highlight the importance of having a clearly articulated learning design, a robust issuing process, and effective structures that ,when combined, give value, meaning and legitimacy to the badge.

These structures may be formal (e.g. issued by accredited bodies or agreed at state or regional level), semi-formal (e.g. issued by groups or individuals with recognised expertise and stature), or informal (e.g. issued and created within communities, localities, or even a school).

There are, in addition a range of specific challenges relating to particular, elements of badge design, processing, issuing and use. Some are practical, others conceptual, and others practice-based. Partnerships between issuers, badge content developers and researchers will be very important in taking this forward. The project described in this report, and our future project in Assam, represent attempts to build such collaborations in India.

Learning Design	Implementation	Sustainability
Flexibility	**Modularity**	**Scalability**
Clarity	**Engagement**	**Shareability**

Six affordances of open digital badges for TPD

8. Concluding remarks

Digital badges represent a unique form of digital recognition with a pedagogically flexible, potentially scaleable, and varied range of applications for TPD. They have the potential to augment and enhance existing TPD processes, yet they also could have utility in helping rethink, constructively disrupt and evolve them. Key insights from our project include the following:

(a) Digital badges perform a range of complementary pedagogic, cultural, social, psychological and strategic functions. Effective implementation must consider and connect each aspect of this multi-disciplinary space and avoid adopting or reproducing narrow conceptualisations or implementation.

(b) The messaging and presentation of digital badges is challenging because most teachers are unfamiliar with the concept. Through our workshops we have built a greater understanding of how to present digital badges and what questions are commonly asked.

(c) Once properly briefed, our work shows that most practitioners and policy makers can see the potential practical benefits for using digital badges. The challenge is finding routes to implementation.

(d) In running pilots and workshops, we have understood more about user requirements and common implementation issues within an Indian context and how technical developments could and should be driven by what teachers need.

(e) To deliver TPD at scale, there needs to be a common currency for delivering and monitoring tecaher learning. Badges could form part of this currency (see p.1).

(f) Our project has demonstrated that badges can be created and administered locally and that adaptation of existing learning systems and courses is possible.

(f) Digital badges require robust learning design and assessment planning. The critiera set for earning badges should be associated with clear statements of learning outcomes and level of achievement. This is one of many ways that badges could contribute to improving the quality of teaching and training.

With digital badges being increasingly promoted globally by providers of skills and professional development training, now is a good time to consider their use for TPD in India and elsewhere. Careful and considered planning will exploit beneficial affordances while resolving practical challenge to embedding and valuing their use and preventing gaming of the process. There may also be a need for a greater diversity in the terminology employed for digital recognition.

Our project has sought to move forward practical and conceptual understandings of digital badges in India with two small-scale pilots and by encouraging engagement and debate among stakeholders. Our preliminary findings signal a potential that should be explored further. Our new project located in Assam is one such next step.

> *'This Covid pandemic has immensely affected the education industry. The term 'remote learning' is a newer term for especially government schools in rural India. It has pushed the teachers to embrace the pedagogy of online education. When I started the [TOL01] course, I didn't have any idea about online teaching learning process for school students. This course opened a vista of technological aids, websites, podcasts and many more that I can use to involve my students online. Though digital badges are a new type of accreditation, I hope in future state government schools will also grant these as a part of TPD by teachers.'*
>
> Teacher (TOL01 pilot)

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