Running Up That Hill

Making Digital Preservation Skills Accessible with Novice to Know-How

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Abstract – Over the last three years, The National Archives (UK) and the Digital Preservation Coalition have collaborated on the development of a growing body of training content under the banner of the "Novice to Know-How" learning pathway. The content has proved to be incredibly popular, opening the door to digital preservation training for individuals and organizations that previously had not been able or willing to engage with the topic. This paper will examine the projects motivations, outputs, impact, and future plans.

Keywords – Training, Workforce Development, Skills, Collaboration

Conference Topics – We're all in this together; From theory to practice; Digital accessibility, inclusion, and diversity

I. Introduction

At iPres 2019 in Amsterdam, the authors of this paper both presented within the same session, each reporting on their organization's approaches to helping build digital skills capacity.

Melinda discussed The National Archives (UK)'s sector leadership role and a recent survey carried out in partnership with Jisc. The survey aimed to assess levels of skill and confidence across a range of digital activities. She detailed how the results of the survey were driving the development of a soon to be published strategy for building capacity within the UK Archives Sector [1],

Sharon's paper focused on the challenges of developing digital preservation skills for individuals and organizations, and existing and future work from the Digital Preservation Coalition (DPC) to help. She also suggested a number of areas where potential resources and/or collaboration within the digital preservation community could help more effectively meet the challenges faced [2].

Little did they know that they would soon be collaborating on a major training project that would begin to address the issues raised. The project in question would produce the popular "Novice to Know-How: Digital Preservation Skills for Beginners" (N2KH) learning pathway.

In this paper we will set out the motivations for the project, describe the project's execution, and discuss feedback and impact, before looking to the future.

II. Why an Online Course Like Novice to Know-How?

The context for Novice to Know-How is drawn from Plugged In, Powered Up (PIPU), the digital capacity building strategy published by The National Archives (UK) in 2019. The need for the strategy was based on sector research into skills, capacity, confidence and resourcing of archive services and archives professionals to carry out activity across core digital delivery areas: preservation, access, and

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engagement. A survey of over 300 archives workers in 2019 [3] was foundational to understanding in-depth requirements within The National Archives (UK)'s area of responsibility; a range of further in-person events and statistical analyses expanded and provided evidence to underpin the strategy.

Focusing on digital preservation, the 2019 strategy included key findings such as:

- Case for wide, general upskilling to benefit archives across the spectrum where TNA needs to deliver: "Unfortunately a gap has developed (and appears to be widening) between institutions leading on digital preservation and the remainder of the sector." (p18)
- Case for training to support wide staff understanding of concepts and tools rather than simply purchasing systems: "Software is not a substitute for knowledge and archives undertaking a procurement exercise instead of developing their in-house expertise in digital preservation risk simply spending money on tools they do not really understand." (p20)
- Case for urgency and risk to collections from limitations of skills: "48% of respondents reported they could not generate a checksum of a digital file, 49% could not perform file format analysis and 55% could not extract and publish metadata from a digital file. In each case, roughly another 25% of respondents reported that they 'had some knowledge/skills' in the specified area. This amounts to a very worrying proportion of the sample of the profession being unable to carry out critical preservation functions on digital records. This is so deeply concerning because these findings amount to an admission that the nature of contemporary collections is such that today many archive professionals can no longer care effectively for the material they hold." (p20-21)
- Case for hands-on, practical walk throughs and detailed tool support rather than focusing on needs at a policy level – there was already high quality training available, which clearly made the case for needing to approach digital preservation, but archives staff who had attended such training frequently did not report an increase in their confidence or skills to handle digital material in practice: "Training must also be the right sort of training. It certainly cannot be purely theoretical…, digital preservation is a craft skill and must be learned in practice as well as theory." (p21)
- Case for easy access: the survey did not specifically seek out information about online training, but the issues of time, opportunity and (to a lesser extent) cost all emerged, demonstrating a lack of commitment from parent organizations to support archivists in gaining skills that they had identified as critical (p24). An online training course would not address all these issues, but it could reduce some of the barriers and introduce flexibility of scheduling.

This collected evidence overwhelmingly supported developing an online training course, alongside other skills development opportunities such as peer mentoring, an in-person "Archive School" in which trainees learned from digital preservation specialists at The National Archives (UK), and the creation of reference materials [4].

Internal funding was secured from The National Archives (UK) to seek external support to create the online learning pathway. The invitation to tender emphasized a number of points drawn from the research and which became core to delivering the learning program. Participants were expected to have low initial skills and confidence and should build these over time during their learning. The emphasis was on practical and hands-on learning, around a variety of tools, which trainees could then implement in their own workplaces. The role of collaborative working with colleagues in IT was emphasized. There was also a strong desire to connect the learning pathway with best practice already in existence. The tender referenced DigCurV and the Digital Preservation Handbook as possible mapping tools to achieve the right level of skills and coverage of the subject.

III.   DEVELOPING NOVICE TO KNOW-HOW

In a coincidence that would later feel like kismet, at the same time The National Archives (UK) was evaluating the digital skills of the UK Archives Sector and making plans for development, the DPC was

reevaluating their approach to training and development.

The DPC's "Getting Started…" and "Making Progress with Digital Preservation" courses had long been a cornerstone of the organization's training provision. The training courses offered learners a broad introduction to the range of activities required to establish a digital preservation program, from developing policy to designing workflows. The courses were each held three times a year at venues across the UK and Ireland and always received positive feedback from attendees.

While the courses were popular with attendees, their potential impact was limited. They were only available to a maximum of 180 learners a year within a limited geographical area. When considered in light of the internationalization of the DPC, this approach to training raised serious concerns in relation to accessibility and ongoing sustainability.

Developing self-directed online training surrogates for the "Getting Started…" and "Making Progress…" courses was identified as the best option moving forward as this would allow more learners access to the materials while being time zone agnostic. There were, however, significant barriers to making this plan a reality. The DPC would need to procure a Learning Management System (LMS), staff would have to develop the skills required to author training content suitable for delivery online, and additional capacity would be required to facilitate the time-consuming process of creating that online content. As a small, non-profit organization, the DPC lacked the resources to move forward with these plans.

The announcement of the "Invitation to Tender" from The National Archives (UK) was, therefore, both timely and exciting. If the project tender could be secured it would not only provide the opportunity for the DPC to make a move into the world of online training, but also to do so in partnership with a long-time ally and friend.

The DPC's tender proposal was submitted in November 2019, and notification of its success was received shortly afterwards. Within a project deadline of 31st March 2020, work was quickly initiated.

DPC staff joined colleagues at The National Archives (UK) in Kew, London, over the 11th and 12th of December 2019, while the rest of the UK was focused on a general election, to develop learning objectives and a course structure for N2KH. This process included consideration of the outcomes of the Digital Skills Survey, along with a wide-ranging analysis of digital skill requirements as indicated by several digital preservation good practice resources. The resources examined included the DigCurV Framework [5], The NDSA Levels of Preservation [6], the CoreTrustSeal [7], and the DPC's own Rapid Assessment Model [8].

The structure developed would become known as the N2KH "Learning Pathway", which included, in the first instance, six courses and 24 modules. The structure was designed specifically for those with little or no digital preservation knowledge, aiming to provide them with the skills needed to put basic workflows in place at their organization. Once the course structure had been determined the process of content creation began.

It had been agreed by the two organizations that the training content should be delivered in a variety of formats that would help engage different types of learners. To facilitate this and to gain the general skills required for creation of content ready for online delivery, DPC staff undertook research on and training in good practice for online training. This included learning around the range of products contained within Articulate's 360 software suite, a market-leading product for authoring online training content.

To ensure that the content developed was suitably clear, engaging, and authoritative, a robust approach to drafting, review, and update was undertaken. Each module was researched and drafted by its author before evaluation by at least two reviewers drawn from The National Archives (UK) and DPC staff. Edits were then made before a final review was undertaken.

Volunteers were also recruited for a pilot of a selection of the training materials to assess the suitability of content and its delivery. A target of 30 pilot participants was originally set, but 109 expressions of interest were received. Ultimately, 58 pilot participants were invited to evaluate the test materials. A survey and focus group were used to capture feedback from the participants and changes to content were made in response to their comments.

During this time a procurement exercise was also undertaken to identify a suitable LMS. This included drafting of requirements, identification of potential systems from the large number of options available in the LMS marketplace and testing of three systems which best met the identified requirements. SAP's LITMOS was ultimately chosen for delivery of N2KH.

Version 1.0 of the N2KH learning pathway content was delivered to The National Archives (UK) on time for the 31st of March deadline. Version 1.0 contained modules covering the following topics:

1. Introduction to Digital Preservation
2. Files, Files Formats, and Bitstream Preservation
3. Using DROID
4. Select and Transfer Digital Content
5. Ingesting Digital Content
6. Preserving Digital Content

They aimed to provide a balance of the theory behind digital preservation work and practical, actionable advice for those who were new to the topic. There was also an emphasis on free or low-cost solutions that would be accessible to those with few available resources. Content was delivered in a range of formats including video, text, interactive elements, click-through tool demos of DROID, and short quizzes.

A beta launch was offered in April, with early access provided to pilot volunteers (both those who participated and those who were not selected). The learning pathway was officially launched at an online event on 4th of May 2020, with the first monthly cohort of learners beginning the course on the 1st of that month. N2KH is offered for free to all learners, with priority places available each month to learners from the UK Archives Sector and from DPC Members.

IV.   N2KH RECEPTION AND LEARNER FEEDBACK

Given the results of The National Archives and Jisc survey, it was expected that N2KH would be popular, but the level of enthusiasm for the learning pathway was a surprise to all of those involved in its development. Places in the first monthly cohort of 140 learners sold out in less than one day. The DPC immediately increased the number of places available with additional financial support received from The National Archives (UK).

The number of registrations received can be partially attributed to timing of the learning pathway's release, just as the world was entering the first COVID-19 lockdown, but three years on it still remains incredibly popular. As of 9th March 2023, 2734 learners have now completed N2KH. And while the largest group of learners have been UK-based, as befits a course developed with the UK Archives Sector in mind, the N2KH learning pathway has been undertaken by learners from 62 countries across Africa, Asia, Australasia, Europe, North America, and South America.

Completion rates are also high, with an average of over 65% over the lifetime of the learning pathway. This is much higher than rates observed for online courses generally. One study from the Open University found that the median completion rate for online courses of 12.6%, with the highest of those included in the study being 52.1% [9].

Extensive feedback has been gathered to ensure that the learning pathway is meeting the needs of learners and to help guide future updates and development. To capture this feedback, learners are invited to complete a survey which includes questions on:

- Their level of digital preservation knowledge
- How long they took to complete the learning pathway
- If the content was appropriate for a novice/beginner level
- What content types they preferred
- If they found the knowledge check quizzes useful
- How they found navigating between resources
- What was done well
- What was missing
- If they encountered any errors (e.g., spelling, and broken links)
- Any other comments or feedback

To date, feedback has been very positive. Over the lifetime of the project the following has been observed:

- Around 95% of respondents have "strongly agreed" or "agreed" that content of the modules was at an appropriate level

- Around 90% of respondents have "strongly agreed" or "agreed" that there is a good variety of content types
- Respondents particularly enjoyed the quiz and tool demo elements
- More practical exercises and case studies were the most wished for additional content

There have also been strong themes within the textual answers provided around:

- Appreciation for the course structure and how content is split into easily digestible portions.
- Praise for the clarity and simplicity of the explanations within the learning pathway, breaking down the complex issues of digital preservation into content that was accessible.
- A level of apprehension felt by many learners about digital preservation before undertaking the learning pathway, and how they felt a confidence now to begin facing the challenges.
- Offering thanks for the availability of course, noting that they had struggled to either gain access to other training dues to barriers such as time or funding, or with the higher levels of presumed existing knowledge of other courses.

The following quotes are taken from the feedback and are representative of the comments received:

I felt the course was extremely well structured. Key concepts were explained from the ground up, allowing us to build up a good knowledge base from strong foundations.

It was the first thing on DP that I felt I could understand and that addressed the practicalities more than the theory.

I enjoyed the whole course and I found it went back to basics to clearly explain fundamental points and build up, which filled in some knowledge gaps for me. It has made me more confident that digital preservation is something that I could now do rather than just aspire to.

I really felt that this was a practical course – I was able to go away from each module and

think about it in the context of my organisation and start to experiment with small steps using the knowledge I had learnt through that day's module.

Fewer than 1% of learners have replied to the feedback survey with negative comments. These have mostly been from those that felt the level of the course was still too high for them.

V. FURTHER CONTENT DEVELOPMENT AND CONTENT SHARING

In light of the positive reception of N2KH 1.0, The National Archives (UK) has subsequently open invitations to tender for additional rounds of content development. The DPC's tender proposals have been successful on each of these occasions and the two organizations have now worked in partnership on a number of N2KH projects that further enriched the training content.

Later in 2020 a small project known as N2KH 1.1 was undertaken to add further practical elements to the course, as requested in the feedback. This took the form of four new tool demos, focusing on free or low-cost tools for fixity checking, moving/copying content, and characterization, and a fifth module on using the command line. The project also included formatting of these modules, and existing modules on using DROID, for delivery via the "Digital Preservation Handbook" [10] as well as through the learning pathway. This was done so that the content would be available to learners after completion of N2KH, whilst also making them available to the wider digital preservation community.

A second major N2KH project was commissioned in early 2021, with the aim of adding a new course on "Providing Access to Preserved Digital Content", rounding out the learning pathway's coverage of the digital lifecycle. Access had been out of scope of the original N2KH learning pathway due to time constraints and the limited number of good practice publications available. But the publication of the DLF's "Levels of Born-Digital Access" [11] and other resources now made the creation of content a possibility. The new course was added to the existing learning pathway in April 2021, and is also offered separately for those who had previously completed the original N2KH.

Most recently, The National Archives (UK) and the DPC have started a new N2KH project (3.0), this time

focusing on delivering training specifically on the topic email preservation. This learning pathway aims to be a progression on the original learning pathway, assuming a solid foundation of general digital preservation knowledge from learners. Again, the content will look to provide a solid theoretical foundation whilst also offering practical skills and advice that can be put into action. In response to the feedback received from learners, real-world case studies are also being included within the learning content. It is expected that the learning pathway will be open to learners in July 2023.

In addition to the new training content that has been and is being developed, work has been undertaken to share the training content with other organizations for deployment within their own learning management systems. All of the N2KH modules have been created in the interoperable learning content packaging standard SCORM 1.2. A guide to the use of the learning content and its structure has been created and all content is available under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) license[1]. As of March 2023, nine organizations have uploaded N2KH their own LMS. These organizations include a number of universities and national collecting organizations, with the content being used to contribute to both teaching and internal staff development.

Support has also been provided on an ad hoc basis for groups wishing to engage with N2KH as a single cohort. This has ranged from simply offering administrative support to organize access to N2KH at the same time for the group, rather than requiring individual registrations, through to DPC staff providing additional training workshops on topics complementary to the main N2KH learning pathway. Additional topics covered have included policy development, risk management, continuous improvement, and advocacy. Informal feedback has suggested this has been a positive experience for those taking part. The benefits mentioned have included:

- Additional motivation and support gained from sharing the learning experience with colleagues

- Improved clarity and outcomes when working on digital preservation thanks to a shared foundation of knowledge

Due to the positive responses received to the complementary sessions, the DPC will soon be trialing a series of "Novice to Know-How Plus" sessions for their Australasia and Pacific members.

VI.   "PLUGGED IN, POWERED UP" REVIEW

In 2022, Simon Wilson, an experienced archives consultant, was employed to conduct a review of Plugged In, Powered Up to gauge the impact of the range of activities provided across the capacity building strategy. This did not directly seek feedback on N2KH as standalone, as the training course was more widely circulated beyond TNA's leadership activity, but it was a key element of the activities to be assessed. The key to success of PIPU would be to see progress in those areas of digital skills and confidence across the UK archives sector. As with the 2019 Jisc/TNA survey, another sector-wide survey was explored and understood in more depth through focus groups. 172 responses were received. Almost 3 in 4 had completed N2KH, the largest recognition and participation level of all the PIPU outputs to date.

The survey outcomes show a major change as a result of 3 years of digital capacity building (Table 1). From 34% agreeing "I have sufficient digital expertise to deliver my role" in 2019, by 2022 this had increased to 43%. A remarkably consistent 9% improvement was also seen in responses to the contrasting "My colleagues have insufficient digital expertise" (agreement reduced from 49% to 40%).

Other key outcomes include:

- 12% improvement in services where digital archives are stored in multiple, geographically distinct locations (41% to 53%)
- 11% improvement in regular fixity checking (17% to 28%)
- 12% improvement in having a digital strategy in place (35% to 47%)
- 12% improvement in clear responsibility for digital preservation (33% to 45%)
- 19% improvement in offering access to digital records of some kind (37% to 56%)

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[1] https://creativecommons.org/licenses/by-nc-sa/4.0/legalcode

	2022		2019	
	No knowledge	**Have the knowledge**	**No knowledge**	**Have the knowledge**
Generating a checksum of a digital file	17% ↓	44% ↑	47%	26%
Performing file format analysis	22% ↓	38% ↑	48%	24%
Managing permissions for digital files	21% ↓	19% ↑	48%	17%
Extracting metadata from born-digital files	33% ↓	16% ↑	55%	15%
Redacting a document for web publication	46% ↓	13% ↓	54%	18%

Table 1: Survey results in relation to specific skills

(Note: figures are approximate as slightly different scales were used across the two surveys)

There is evidently much room to continue to improve, but this is a significant shift in a short period of time – which was also, of course, a highly disrupted period for all working in archives services, when the exigencies of dealing with the pandemic took precedence at times, and where some archive services were entirely closed for months if not longer, with employees on furlough.

Some respondents were keen to see Novice to Know-How content more accessible outside the online learning management system, as they wanted reference access. This is in fact already feasible: tool demos are embedded into the Digital Preservation Handbook, and the entire course or selected elements downloaded as reference materials, for participants, or as a whole for those who have not taken the course. This emphasizes how valued and flexible the content developed through N2KH is, although it also underlines the need to continue to communicate the alternate ways in and ongoing accessibility of the content in different contexts. There was spontaneous appetite for an "archivist to digital archivist learning pathway", suggesting that the skills development and confidence-building approach of N2KH had real resonance for participants.

One might get depressed about the levels of real confidence in practical tasks but Wilson states "It is interesting to note that the confidence level for the practical tasks…is higher than it is for the advocacy and broader tasks." – in general there is very low confidence, and it is not especially focused on the practical at it was in 2019.

The 2019 survey showed a high demand for online training, which was not visible in the 2022 survey, presumably because this had been developed and delivered to such a high proportion of respondents.

13 respondents to the 2022 survey identified their main barrier in delivering more digital preservation as having the confidence to follow-on from Novice to Know-How training – this underlines that future developments need to retain a focus on confidence, and not go too far too fast if they remain targeted at mass audiences. Many more respondents wanted "more of the same" from TNA's next steps.

Further anecdotal evidence of the positive impact of N2KH has been observed in the applications for UK Archive Service Accreditation since 2020. The majority of applications have cited N2KH as a means of improving digital preservation skills across archive

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services, bringing skills up to a shared level and informing colleagues to the point where institutional conversations can move on.

Less positively, there was still a sense of frustration and lack of confidence in digital preservation skills for certain respondents. Some commented that N2KH itself assumed too much and "a more basic introduction to digital archives is needed to introduce the key concepts". Given that N2KH starts from a very basic understanding that digital records require management, this was dismaying. This may underpin the analytical observation that the previous gap between best and worst preservation performers is widening. The weakest services may require a different approach. It may also be linked to issues with general information technology competencies and related confidence within the sector.

Additionally, only 19% of respondents say they have a complete digital asset register (41% say no/don't know). This may in part be an artefact of using different terminology in N2KH but is a worrying baseline.

VII.   FUTURE PLANS

Continuing to deliver an online training offer which goes from basics to more expert is a clear priority for both The National Archives (UK) and the DPC.

At present we have focused on novice to intermediate work, with the forthcoming email preservation learning pathway offering the first in a potential series of content looking at challenges of particular formats.

It may be that such courses to expert level are worthwhile, but The National Archives (UK) does not yet have a clear steer from the archives sector as to what would be most valuable, so they will continue to explore options and monitor sector needs. At present, all development of N2KH has required competitive tendering, and project funding, often on contracts with tight deadlines. This has created opportunities which would otherwise have been impossible but also management issues and time pressures. It may be that an alternative collaboration model could work better in the long term.

The National Archives (UK) hope to continue to support networking and skills sharing, through peer mentoring and opportunities to share staff expertise with the sector. They are also aware that capacity for development time in their target audiences is limited and are considering whether there is a role for a national body in modelling and advocating time for training across the country as well as a clear role in advocating for the significance of the work

There is also the question of how to serve those who are not sufficiently confident even for N2KH. This may involve additional support for particular activities, such as getting to a Digital Asset Register baseline.

In line with their ongoing program of translation of other key resources, the DPC has considered the possibility of translation of the N2KH to languages other than English. Unfortunately, there are additional barriers to this process for online learning content. The time, skill, and knowledge required to carry out the translations are not the only resource requirements, for online learning there are also significant resource requirements and complications resulting from the need to specially format the content in the correct format for delivery through an LMS. Although it is unlikely that progress with translations will be possible in the short-term, the DPC will continue seek possible opportunities.

The organization is also working towards the delivery of online training development outside of the N2KH collection. Courses are already in development on the topics of "Continuous Improvement" and "Risk Management for Digital Preservation" and additional courses around a variety of digital preservation topics are being considered. Without additional funding, the DPC will not be able to make this training free to all as with N2KH, but it will be considering different funding models that will ensure the content is financially accessible whilst meeting costs.

The continued sustainability and relevance of N2KH will remain a key priority for both organizations. A yearly review schedule has been included in forward planning to ensure the content continues to represent good practice in the ever-evolving field of digital preservation.

The learning pathway will also remain free for all learners, although the number of monthly places available may be reduced if additional funding to support access is not secured. Further promotion of the course to new audiences is also planned, as are

efforts to increase awareness of the availability of the content within local LMSs.

VIII. Conclusion

The development of the Novice to Know-How learning pathway has been a rewarding endeavor for all those involved. It has reached a large, international audience, and has provided many practitioners with the grounding in digital preservation practice they have previously been unable to access.

The National Archives (UK) and the DPC will continue to collaborate on supporting the sustainability of the learning pathway and will investigate the possibilities for further developments that will help broaden access to digital preservation knowledge and practice.

ACKNOWLEDGEMENTS

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