

Capturing and Managing Knowledge

Wayne Langford

Ed. S. Candidate Cohort 18/ Fall 2017

August 25, 2016

Kennesaw State University

Introduction

Technology training, as it is so often delivered in the education arena, consistently fails to produce expected results. The continued use of traditional, large group, professional development is almost certainly due to the economy of scale. Instructional coaching, as a replacement for traditional professional development models has become more and more popular over the last several years in no small part due to its efficacy and “stickiness”. The limitation for coaching as a delivery model for technology training is that there are very few schools with the budget to employ even one coach let alone the number required to work with eighty or ninety teachers. Given that a typical, large school can easily employ this many teachers, coaching is used far too infrequently. The scale factor combined with the inevitable small problems that the technology staff must troubleshoot on a daily basis means that technology coaching must remain a dream for many schools.

This is where knowledge management has the opportunity to make a significant impact. By capturing and making available targeted training materials, a single coach’s reach can be multiplied by an order of magnitude. There is no shortage of explicit and tacit knowledge in any given school. The problem is that this knowledge is rarely captured and even less frequently made available.

McConnell Middle School is in many ways a typical, large, suburban, middle school. The school is quite large with a current enrollment of 1830 students. The students, faculty, and staff are diverse. The technology is well maintained and up to date and the faculty comes to technology with an extremely broad range of skills and expectations. Many of these teachers are

ready and open to leveraging technology in their classrooms, but are often held back by just a few, small questions or concerns. Sometimes an entire lesson is sabotaged by a single unplugged cable, a typo, or a misunderstanding that could have been remedied quickly with a quick reprise of steps.

Our capstone project attempts to address this problem by developing a multi-pronged, set of web-based tool that allows a wide variety of training videos, documents, files, advice, answers, and best practices to be shared and accessed by the faculty and staff from a simple, searchable, and understandable interface. This wiki and websites were developed by Wayne Langford using feedback from the faculty and staff at McConnell Middle School.

The hope for this project is not to get rid of all technical problems or replace face to face training and coaching. In fact, this project seeks to enable more time for those activities by reducing the time spent chasing down issues that should never have been allowed to interrupt instruction in the first place.

Description of the Capstone Experience

In November of 2015 the researcher began meeting with local school administrators and faculty stakeholders who had been previously identified to help critique the design and functionality of a knowledge and training materials repository for technology training at McConnell Middle School. Concurrently with these meetings, the author was working through the evaluation of various knowledge management systems. During this evaluation phase of the various turn-key, Knowledge Management (KM) systems it quickly became apparent that the setup and maintenance of a full-blown, KM system was far beyond the scope of both the author's abilities and the time frame for the project. There followed a period of reevaluation

and more meetings with various stakeholders to determine a set of non-negotiable features that would govern the design parameters of whatever system ultimately took shape. The primary requirements were ease of use, plain English searching and fast, universal access. It soon became obvious that what the author and stakeholders required did not necessitate nor even favor the complexity and power of a true knowledge management application.

In late November of 2015 the author put together a proposal for a searchable, technology training database and took it to a meeting with stakeholders. During that meeting with stakeholders the problems in finding and utilizing the existing training materials and knowledge collections were found to come down to two limiting factors. Factor A was the broad dispersion of the various materials across different servers, the cloud, and various websites and whether the file formats were .pdfs, Google Docs, Word documents, videos or web pages. Factor B was found to be that the limitations of search were both compounded by lack of a central location and that most of the materials were not descriptively named and/or adequately tagged if they were tagged at all. The author left that meeting with a mandate from stakeholders to first consolidate the location and the various formats of all existing training materials and then to rigorously and carefully tag the documents as well as use more descriptive titling. The hope was that this might allow a searchable database of training materials and tutorials that could achieve an adequate level of user friendliness to make it useful to stakeholders.

The author began moving all existing training materials to a new, private, intranet site in November of 2016. The decision next turned to how best tag and categorize existing materials while allowing for growth as new materials were added. The stakeholders were surveyed for

their typical search methods when looking for a specific topic. This information provided by stakeholders was then resolved against more objective criteria to build a vocabulary that fit more naturally with “teacher speak.” The materials were then slowly and laboriously retagged and amended with the new vocabulary and some tests were conducted to see whether results were improved.

The author discovered that the additional tags did, indeed, result in a higher probability of the search returning appropriate materials. However, the additional tags also meant that, in some cases, far too many results were returned which further complicated the process. In these cases, the author began to look at ways of paring down or modifying the description or tags for resultant items that not fit within the stakeholder’s expectations. After several revisions the author began to get more consistent results for stakeholders. At this point the vocabulary and process were codified and the slow process of applying the process and vocabulary to all existing materials began.

Once field testing began another problem became apparent. Materials dealing with technology are rarely static. Materials which have become outdated can quickly turn from asset into a liability. There was also no good way to encourage and collect feedback. There needed to be a way to make the website more dynamic and malleable. Therefore, in January of 2016 it was decided to move all materials that did not contain potentially sensitive information to a new Wiki which would not require a login, allow user commenting, easy revisions, and collaboration.

At the time of this writing the backlog of existing resources is about half-way finished being tagged. The resource Wiki has become quite popular. This popularity has, surprisingly, exceeded the local school which it was intended to support and has begun to be referenced by

schools all over the county. This popularity of this resource would seem to validate the original premise behind its creation: there is clearly a need for a central place for teachers to go and get questions answered quickly and easily.

Overcoming Barriers

While the initial plan involved creating and hosting a database-backed website for training materials, the parameters for the site's interface design began to become the focus of the project. In the end it seemed that the design of the database and website was actually getting in the way of the more important concern: providing useful content for teachers. Stumbling upon the Wiki format proved to be a very happy coincidence as it meant the focus could move to the content and away from the infrastructure. The fact is that, had the author stuck to the original plan, the website would likely still not hold enough content to be useful. Settling on the Wiki format also meant that questions of interface design, which had dominated discussions surveys, could be tabled in favor of concerns about content.

After moving existing content to the new Wiki site, surveys and interviews were used to determine the most pressing technology concerns of our teachers. This is where things got interesting. While the training needs and desires were varied, they were far more focused on troubleshooting than expected. The remaining requests, while focused on technology integration, were equally diverse. It became apparent that interactivity would be required in a way that would not only make searching for specific strategies or slight variations on the training materials but also would allow the archiving of those branches with feedback from

users on the effectiveness of the supplied answers. It was at this point that the author decided to borrow an idea from GitHub. GitHub is an online software project host where users and developers are able to interact through Wikis, forums and a ticketing system. This allows participants to interact with the creator and each other to work towards problem resolution in an organized and efficient manner. It also archives all of these interactions in a searchable format so that others facing the same problem or “bug” can quickly find a community-approved and tested solution. This level of interaction will be planned for the next phase for the resource.

Follow-Up

In the future, the author plans to continue to add more content to respond to surveys and face-to-face interactions with educators, implement a question and answer forum, build troubleshooting simulations to allow teachers to try their skills in a safe, non-threatening environment and expand the contributor and user base to include other schools in our system. In order to reach a critical mass, the tool will likely need a larger community than a single school can provide. For this reason, the plan is to open the platform up as much as possible. It will only be by making this knowledge base easy and quick to use that it will succeed where other, clunky collaboration tools have failed.

Reflection of the Capstone Experience

During this process it slowly became clear that it is important to revisit the content over and over again. With each iteration we seemed to inch closer to the original vision for the tool. Therefore, while we consider the current revision of the Wiki to be successful and the survey and usage metrics would seem to back this up, there is still so much potential left in

this idea that the author fully expects to spend the balance of his career adding and refining the tool.

In designing both the intranet site and Wiki several visionary leadership standards such as those set down within PSC standards 1.1, 1.2 and 1.4 were addressed. These were demonstrated in facilitating the design, development, implementation, communication, and evaluation of technology-infused strategic plans and by implementing strategies for initiating and sustaining technology innovations and for managing the change process in schools. The vision may have been birthed by the technology department, but it was unquestionably the child of a collaborative process between the entire staff that was, at times, explicit and at other times amorphous. This collaboration was both required to generate buy in from the staff (Knight, 2007) and to identify the culture of the school. The other standard that was implicated throughout this process was PSC 3.6. The collaboration between the technology department and staff to evaluate the various tools and resources on offer is unprecedented in determining accuracy, suitability and compatibility with our school's technology infrastructure and our school's culture.

Once the need was determined the design had to honor the spirit of the staff or, in the words of much knowledge management research, the culture of the school. The importance of making that concession early on in the design process can not be overstated. The author needed to make sure that both the tool and the process would nurture a knowledge sharing culture. And this was where contemplative practices and a willingness to go back to the drawing board whenever the staff's culture was not respected really became essential to the success of the project. Effectively sharing knowledge will rely on a shared context - culture -

and “there are no ‘ready-made’ solutions to cultural problems, so there remains a need to examine culture in knowledge management within different types of organizations” (Pugna, 2015).

The culture-building component of this process, while initially intended only to inform the design and to build buy-in among stakeholders, may ultimately prove to be the most powerful part of this experience. As the implementation rolled on and a collegial respect began to replace the team member’s sense of duty, a new collaborative spirit began to infuse the entire process as well as many other interactions. The new mantra for the author’s department has become to avoid the attitude of the system or presenter as expert. “The old model of an expert talking to a room full of strangers is, in some cases, literally worse than nothing, leaving teachers feeling frustrated, disappointed, insulted” (Knight, 2007) will no longer be tolerated in the design of any of this department’s systems or training materials. The stakeholders have learned that they will be consulted and, more importantly, that they will be heard.

References

Standards. (n.d.). Retrieved October 27, 2016, from ISTE website:

<http://www.iste.org/standards/standards>

Pugna, I. (2015). Factors affecting establishment of an institutional knowledge management

culture Retrieved from ftp://ftp.repec.org/opt/ReDIF/RePEc/ami/articles/13_3_7.pdf.

Knight, J. (2007). *Instructional coaching*. Thousand Oaks, CA: Corwin Press.