Online Assessment Through Peers
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Abstract
In the time of incremental learning, people are solving big problems more easily than ever and as a result are able to start and finish very complex projects. The learning curve for most of these projects is growing with time of involvement in them, so coming to conclusions with a binary approach would only mean failure of these projects.

One of the offered solutions to accredit skills gained through building projects are digital badges, which are awarded at the end of the assessment. Exploring this field with an experimental project built by Peer 2 Peer University, gave some good insights in what way a general Badge system could be presented to key stakeholders, schools or potential employers as a credential.

Keywords
Badges, online learning, community, assessment, feedback, project development

Online learning communities
There are many educational endpoints available online, which offer a great range of topics for learners. It enables an individual to choose their own set of knowledge, so participation in these online education projects makes all learners unique. The “one size fits all” model of education does not fit into the “new” world anymore. Interaction with peers, conversations and feedback that is provided on this level are giving a better insight in the way humans are learning. With this approach we realize that assessment also needs to shift and what better way of getting recognition and credentials for the newly gained skills than through peer-to-peer assessment.

In the technical world of software development and software engineering (and to some extent computer science), it is a fact of life that there is almost never “one right way” to solve a particular problem so learning how to solve problems is valued most. How one gets a feedback at the end of the learning cycle can be particularly damaging and can result in poor practices. Early feedback coming from an online community is valuable to engineers and can be beneficial to end-users. Giving that participating is learning there was a lot of end points developed, within this community, where feedback can be received or given. For instance, websites like Stack Overflow (http://stackoverflow.com) and Quora (http://www.quora.com/) take contributions and most importantly for members, they can learn from each other along the way.

Most commendable feature of this online community is that anyone in the community can give feedback on any project. If this kind of approach is helping a software engineer to do a better job, why it could not help other online communities in other fields?

If participating means learning in any online community, than it is safe to say that by observing and chiming in with ideas in such community, over time the minimum knowledge gained is things like domain of the community (i.e. programming computers, write music, cooking), and how to communicate within it (i.e. communication tools, but also the appropriate tone of voice).
With that in mind it is beneficial to let communities decide what’s acceptable. Actions like voting an answer up-or-down like above mentioned Stack Overflow, liking a post, or remixing a project which are different levels of granularity, but still allow anyone in the community to participate in the feedback to any project. A very community driven development of projects provides a good quality lifelong learning experience, thus members of such a community uphold participants who make quality contributions and celebrates them.

The actual core skill in a community of practice is feedback, whether it means to leave a comment on a post, suggestions on a project, or resolving an open inquiry. Giving feedback is a way to apply the norms and values of a community and it is also a kind of learning--in and of itself.

**Assessment principles in an online learning communities**

The fact is that the learning on the web evolved with the evolution of technologies used building it, and therefore new ways and trends have emerged. The communities that are considered successful and are admired widely share some of the similar principles:

- **Recognizing different paths to an answer.** Traditionally the path to assessment is very binary: it presents itself to be only 0 or 1 (right or wrong) and this results as a mismatch between this kind of monochrome approach and working on complex projects. Working on projects is mainly iterative, with which understanding grows over time. For example an urban planner tasked with building a new park could find many solutions to the problem--they could optimize for greenery or for social interaction, maybe for ecological impact--and all of the solutions would be relevant. There is no one right answer with most of the problems people face on a daily basis, thus the way we assess learning should not be just a black-and-white specter either.

- **Model concepts of quality and community norms.** Learning communities are quite self managed, moreover they determine on their own the acceptable actions and approaches. What is perceived as quality is usually brought to members attention by the community "experts", moderators or any kind of source of trust within the community with something like “Featured Projects” or “Projects We Love” galleries, imparting exemplary work with some sense of status models behavior for the wider community.

- **Encouraging conversations and building social presence.** If mastering both a domain and the norms and values of a community is gained by participation, than fostering deep conversations amongst community members is an action to improve the quality of community projects. For example, if you post your first “home made pants” project to sewing community site, the feedback from the community will likely:

  a.) make your future home made pants more stitch-perfect and,
  b.) model for you how to participate in the larger sewing community.

If you’re stuck on a certain stitch, consulting experts within the community can elevate you up, help you overcome obstacles and take risks on the next sewing project.
• **Build in reflection and self-assessment.** Essentially this is the practice of asking learners to look back on their own work and diagnose their understanding of it. Sparking thinking about learners thinking during the development of their project, provides knowledge of how to use gained skills in the future. It’s safe to say this is a quality lifelong learning and self-directed exploration, both of them a good learning foundations.

• **Supporting a learner’s continued growth and evolution.** Mechanisms like e-portfolios are a space to showcase how learners evolve through time, and their ability of gathering the resources available on the web. Progressively they get more and more visible within a community, thus the expectation of taking on increasing responsibilities and giving feedback is greater. Such members usually maintain the norms of the community as well.

**Collecting evidence of skill development**

Making a learners knowledge and skills visible outside of the community is a problem for recognition of it’s members. Biggest challenge is to make this gained skills visible to formal educational institutions and broader career ecosystems, because informal and peer-based learning is only recognized as a level of support of a formal curriculum.

The reality is that most of the formal systems do not recognize skills like digital literacy and granular knowledge or incremental learning as a competencies, simply because they are not accredited. In this way the whole picture of a person is lost and the “story” told about their skill set is very limited.

One of the offered solutions is digital badges which can be displayed as credentials to learners competences.

**What Is A Badge?**

*badge [baj]: a special or distinctive mark, token, or device worn as a sign of allegiance, membership, authority, achievement, etc. – Dictionary.com*

Badges model is taken from the Boy and Girl Scouts groups, where a certain badge is awarded for member’s achievement. In this way members are recognized by their strong points and sometimes their not so strong ones as well.

Transferring this to an online learning community, this kind of displaying of achievement can be associated with online identity of its members and could also be presented to key stakeholders to demonstrate member’s capacities. In this way badges can play a crucial role in a learning environment by connecting contexts of learning and making those learned skills more pragmatic, mobile and thus more impactful. Badges can be awarded for a potentially limitless set of individual skills regardless of where each skill is developed. Collection of such badges can serve as a virtual resume of competencies and qualities for key stakeholders, schools or potential employers.
Badges - The experimental project
At Peer 2 Peer University, we realized that the web is affecting learning, and moreover what are priorities for assessment. We also want to bring up some examples of how these ideas could work in action.

For this purpose we have build a system that would enable its users to create, give and earn badges. We believe that learners portfolio of badges they award and earn displays continued growth and evolution of their knowledge. However, the emphasis stands on giving feedback to the peer by writing down few points that stand out in the project they are showcasing, before awarding the Badge is even possible. With this approach we wanted to avoid gamification and triviality of badges as credentials given at the end of the assessment process, thus make them more credible.

Sure there is a lot of Badge systems out there already, so the question as why not reuse any of the existing one is in order, but we’ve came to realize that our learning design of the system must be qualitative, learner-centered, project-based and mostly feedback-driven. As such, the system is an alternative to some of the more gamified, automatic or quantitative systems out there, and we have been able to change people’s minds about badges by walking them through this different approach.

Central idea of our badge system is allowing anyone to be able to make a badge. In this way learners can decide on their own about requirements for achievement, and how should understanding of these requirements be interpreted. Badges created by learners are intended to create learning communities around presented projects and develop relationships based on delivering feedback.

Our badge system is open source, thus available for everyone to use, duplicate or build on top in order to provide the learners a different assessment to various online communities.

Building the Badges system
There was a predecessor of above mentioned system, that we have integrated within our learning platform. Based on experience with this system and paired with one of our core values of peer-based learning we identified the following core design principles before we begun with development of our Badges system:

- optimizing for meaningful feedback,
- prompting iteration and improvement of projects,
- nurturing mentorship between learners.

Once the learning design was established, we drafted a user experience, and presented the specification to our community. Throughout the development we stuck to the 3 we believe to be most important things about building such a system:

- Building small pilots and testing them, would provide us with early and valuable feedback upon which we would build,
- Recruiting and sustaining a small and vibrant Badge community is the key - power users are best marketers,
- Reaching across the aisle to more traditional folks to help make Badges count.
Findings
The system has first been presented at the DML conference in 2013 (http://dml2013.dmlhub.net/) and we are proud to say it came a very long way since then. In one year there were 244 badges created, 287 projects applied to achieve those created badges and all together we recorded 755 learners.

Within this dataset, we have been observing among other things, who are the main beneficiaries and in what way they would benefit from the system. The conclusion until now is that the main group of users is informal learning organizers. This was a bit unexpected, since we initially thought anyone might navigate over to our system and find a badge they would qualify for.

As the system evolved we found that our power users became mainly organizers and facilitators of informal learning groups, for example a face-to-face group like The Youth Voices summer program (http://youthvoices.net/front) and online learning groups with project-based approaches. Another observation emerged that instructors, organizers or facilitators quite often needed to buy into the peer-based, learner-centered approach to this badge system before they would integrate badges into their learning design.

Many times users of the system struggled with the idea of sharing “expertise” among learners who received a badge made by them and sometimes they would struggle with credibility of badges as a tool paired with assessment. After developing the feature where learners were able to store their badges to the Mozilla’s Open Badges system, there was a significant improvement with this issue.

Possible future directions and improvements
As this is an experimental project and while our assessment experiences are evolving there are still some issues we want to address. For example the issue of how exactly to approach the expertise in an online learning community, since the term “expert” implies hierarchy? Right now, the person who creates the badge is automatically an “expert” but that might not always be the case. So opting for a sample project during creation process would probably be ideal.

In other words, we are still thinking how to treat those who have more experience in an equal way to novices or professional experts.

In addition to this, users had also expressed they would like to have possibility to create the image for a badge within the process of creation instead of providing their own image. With the project using up all of the current resources that feature is still in the backlog. In addition we find that badges as credentials would stand a better chance distancing themselves from gamification with and LRMI options built in.
Final words
“Credentials are often the gatekeepers to opportunity, recognition, success. Unfortunately, accreditation is extremely slow to change, the locus of power is very top-down, and transcripts don’t tell us much about interpersonal skills or mastery. But the web can.”
Vanessa Gennarelli, Learning Lead at Peer2Peer University

References:
http://reports.p2pu.org/reports/assessment_on_the_web/