

Analysis of Internet as a Medium for Informal Education

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ABSTRACT

This research analyzes Internet users learning skills and concepts more effectively on their own time, often in order to accomplish a specific task, via online resources often generated by non-educators. This trend is particularly evident in computing areas like digital media and computer science, where real-life skills can be trained actively or passively, even remediated as game-specific skills. Informal learning in this sense can entice more toward learning new skills and concepts at an earlier age and improve the overall skill level of the workforce as well as decreasing the time to a marketable profession.

Categories and Subject Descriptors

K.3.1 [Computers and Education]: Computer Uses in Education – *Collaborative Learning*;

K.8.0 [Personal Computing]: General – *Games*;

H.5.3 [Information Interfaces and Presentation]: Group and Organization Interfaces – *Web-based interaction*;

General Terms

Documentation, Performance, Economics

Keywords

Informal education, online communities, human-computer interaction

1. INTRODUCTION

It is possible that particular skills and concepts can be more easily approached and attained in these informal learning situations, as well as providing an economical alternative to formal education. For students interested in these formal institutions with insufficient financial support, the difference between the cost of education and the workforce value of the education is a cause of serious concern. Such a situation could lead to students possibly abstaining from, dropping out of, or going into significant debt for attending an institute of formal education. However, with increasing Internet accessibility and ability to publish educational materials online, free or low-cost resources for learning has likewise become more accessible. Furthermore, it also provides a route for younger (secondary) students to sample some skills that are not well confronted due to limitations of formal education.

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Computing and digital media skills are a common result of Internet-based informal learning, often providing a basis for marketable skills in a short time. More support and official recognition of informal education as a valid method of learning may improve motivation to learn new skills and increase the population and diversity of the skilled workforce.

1.1 Formal and Informal Education

This research includes many references to formal and informal education and learning methods. Formal education is often referred to when the source is widely and officially recognized, such as accreditation and nationally required curricula. A select group of hired professionals are often the teachers of their courses' content, standardized across the particular level of education. Benchmarking in the form of exams are common as a way to assess the individual students' success and the teachers' and curricula's efficacy. The content is not usually intended to have an immediate application but rather to provide a basis for continued formal higher education via university or vocational school.

Informal education is using the same content as taught by formal education, but the learner replaces the teachers' role in deciding what and how the content is learned. This self-education requires the student to have full responsibility for the content while also greatly improving flexibility. Informal education is also not standardized, making benchmarking difficult, since the reason to learn the material is ad hoc. For example, a full-time computational media student may be writing a research paper on how he has grasped the material of a formal class while also informally learning how to write the paper using Association for Computing Machinery (ACM) format for the sake of preparation for a future in computing academia. This research focuses more on this informal method of acquiring new information and learning how best to apply it for what the learner intends.

2. EFFICACY

The ad hoc nature of improving a skill via informal self-education (e.g. learning a new programming language or effective information visualization techniques) prevents an entirely reliable method of finding data on the success of efforts seeking it. However, based on a 2008 survey of 3700 freelancers 46.1% of them were self-taught in their field, most of them related to computing and digital media (Freelance Switch 19). Although this does not indicate the total population of those who have taught themselves a skill, it does show the efficacy of self-education for those who have likely dedicated significant time to pursuing that particular skill to a career. Indeed, pursuing skills to the point of professional application is an extracurricular activity highly regarded by computing industry employers, with many students learning new programming languages or applications to demonstrate a fully-rounded knowledge base for an increasingly interdisciplinary career.

The motivation of seeking self-education can be simply seeking new skills for the sake of learning something new, or it could be to passively train a marketable skill to eventually be used professionally. The former can be more effective, as there is no risk of losing time training other more important skills such as via school or work. It may also be for the sake of fitting in with a community, such as in games or help section of social forums as will be visited later in this research. However, the latter can have a greater impact on the person and for the possibilities of training the skilled workforce without expensive methods currently in practice such as post-secondary education, vocational schools, or academic certificates.

3. INFORMAL AS AN ALTERNATIVE

Post-secondary education is often pursued at institutions with academic or professional degrees, most commonly to acquire skills for desired occupation or pay (*How America Pays for College* 15); however, with the increasing accessibility to and amount of content available via Internet (McMillan), the experience currently only available via formal education should eventually also be available online. Assuming technological determinism, this may provide a suitable alternative to formal education or even be considered formal education itself in the future on the same lines of homeschooling. At some point freely available information and methods could be on par with or exceed that of institutions of formal education. This coupled with the aforementioned motives and responsibility of informal education-seekers could mean a highly configurable and powerful education without the high cost of tuition at higher education institutions.

The economic standpoint of opting for a non-formal education is another reason for adoption of informal education via Internet. For those who either cannot afford or access higher education without significant financial backing often opt for unskilled labor after secondary school. Alternatively, the overall skilled workforce could improve if informal education were more developed and promoted. The technological literacy and confidence, especially with computers and Internet resources, of recent generations is significantly improving according to the National Science Board. In particular, media is becoming more interactive and provides a gateway for people to interact with online technologies (Kessler). This a prime gateway for those who would not pursue higher education to use the Internet as a medium of learning.

4. SOURCES AND MOTIVES

Where people discover new ways to learn concepts and skills online is a matter of what the person is seeking. Social media is a site of significant convergence ("Introduction" 19), enticing previously offline demographics, like seniors, to join an online community. Using this as a gateway, these users may be drawn to public discussions on forums, message boards, and other social venues. For example, OpenStudy and Stack Overflow facilitate interaction between its users to generate its educational content. While this ensures a broad range of methods and approaches to the particular topics under review, it lacks focus for someone seeking to wholly improve a skill. Instead, people may choose to follow tutorial-type websites and guides. This is especially the case for programmers seeking new languages and applications to learn, as many tutorials are interactive and can fully exploit the Internet as a medium for education, as will be covered in the next section.

Participatory culture, as described by Henry Jenkins in his 2009 white paper, is another gateway for informal learning. Games in particular are a foundation on which many online cultures are

built. Cyber Nations is an online nation simulation game with a user-created universe broader and stronger than the game itself. Alliances created and managed by players attract more players and their nations, mimicking that of real-life organizations like NATO or ASEAN, via their communication platforms outside the game, often forums. Users are often given tasks and roles within their alliance that often translate directly into marketable skills in real-life such as graphic design, creative and technical writing, project management, and communication. For example, in order for an alliance to attract more users, the graphic design department may create or remix propaganda artwork touting their superiority, and the writing department may generate news articles recounting the recent battles. Meanwhile, diplomats that maintain relations with other alliances are using their communication skills to negotiate or strong-arm with in-game economic leverage other alliances to join their ranks in an upcoming alliance war. Finally, when the final hour comes, the upper military command must organize several hundred players and their nations into wartime roles, assign duties, and make high-risk strategic decisions to win. To facilitate this, budding hackers break into rival sites to spy, and programmers build simulation programs and ad hoc calculators to determine the best outcome of the commanders' strategies.

This entire time, collaborative learning takes place as new players join the alliance and seek the fun in the game: entering one of these roles. The players who have been around longer may write guides for newer players, improving their technical writing, and during peace time some alliances have a university-like environment set up for military commanders to discuss the finer points of tactics and strategy, improving their abstract reasoning and project management skills. In these cultures, real life skills are remediated into in-game skills, where they are picked up by new players for the sake of having fun, and then translated back into real-life applications that may provide a basis for marketable skills.

5. FORMAL AND INFORMAL CONVERGE

In games, players' mutual success is often a driving factor in helping each other learn new skills. In the roles previously described, such skills can allow a younger audience a greater and earlier exposure to real-life skills that may be passed over in formal education that require more standardization. In *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*, Jenkins recognizes that:

...collaboration may be the most radical element of new literacies: they enable collaboration and knowledge-sharing with large-scale communities that may never personally interact. Schools are currently still training autonomous problem solvers, whereas as students enter the workplace, they are increasingly being asked to work in teams, drawing on different sets of expertise, and collaborating to solve problems (21).

Even with media and participatory cultures creating a presence or migrating fully to the Internet, formal education has not yet fully embraced the Internet as a major medium for education. Few online schools earn the same clout as brick-and-mortar universities, and even fewer college officials have an optimistic outlook of offering their education via Internet ("College"). Instead, what formal educational institutions have started to create are stronger presences online to promote what they only offer in class (Keller).

However, some educators and institutions are recognizing this shift to the Internet as a significant medium of education, and

many are publishing their own material online. Two sources are deploying a significant amount of freely available material: OpenCourseWare from Massachusetts Institute of Technology (MIT) and Stanford Engineering Everywhere from Stanford University. These two internationally acclaimed institutions are providing their most popular courses' content, most including actual in-class content like lecture videos or podcasts, and also allow their respective communities to submit more material. These approaches are still flawed, however, in how to use the Internet as a medium. For example the lack of the formal class experience, like discussion in class or with the professor, can leave this approach feeling empty, and it only uses Internet as a way to disseminate printed material and standard video that was not made for the web in the first place. Some websites based on a formal education format but at a lower cost can offer the ability to interact with the material in a web browser, but this is still not using Internet as a means of what it was built for: communication.

P2PU, however, is one way to properly use Internet as a learning tool, featuring communication and collaboration between users while working on the content to be learned, generating or searching for content, and seeking new users. P2PU harnesses a forum-like community that has demonstrated its ability to use users to coax more out of other users for the sake of mutual fun. It also operates from a free and accessible site. Most importantly, it combines this with a strong presence of industry professionals who volunteer to organize curricula of the subjects (mostly computing and digital media). There may be just one or over 30 organizers per subject that work together to design the path the course will take, generate the content, and suggest the best ways to learn it. For example, organizers of a popular Javascript course write their own detailed guides and quizzes on the site, linking to other non-P2PU guides and videos as they find better sources, and suggest using Firebug# to directly interact with the page they are viewing (or is linked to) to apply what they are learning in real time. Users have the option of dropping out of a course at any time without risk of losing more than what they started the courses with, as tuition would risk in formal education. The skills developed here are marketable ones, allowing users to casually use the site to eventually use it formally as a career or other source of income.

This remix of all the strong points of learning via Internet - accessibility, community-driven, loosely yet professionally organized at a higher level - makes this concept of a digital community or culture the focal point of where informal education can begin to develop into a new generation of learning. With offline and online, formal and informal education converging, a future developed network for seeking self-education becomes more realistic and accessible for those unable or uninterested in seeking formal education as the way for students to reach their career goals.

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