

## BettrAt Platform for Interest-Based Learning

## **BettrAt** Introduction

Summary What is BettrAt? Background to B<u>ettrAt</u>

### Summary

BettrAt is a cloud application that helps groups of people with common interests get better at those interests. BettrAt was created at the IIT Institute of Design (ID) with the generous support of the John D. and Catherine T. MacArthur Foundation when the foundation asked ID to design an electronic learning record that kids and adults could keep throughout their lives.

The general intent was to create an application that, by facilitating intrinsic interests of each person, could increase the motivation and relevance of all learning, both within schools and in informal learning institutions.

#### BettrAt opportunity space

Over the course of three years, we employed strategic design methods to identify and uncover the needs, values, and challenges of informal learning. Our research uncovered these opportunity areas: the need for reflection, congruence of formal and informal learning, and learning in purposeful interest networks.

First, people are suffering from information overload due to the proliferation of content and tools the internet has placed at our disposal. As a consequence, the critical task of reflecting on one's learning has become even harder. BettrAt structures information in a way that encourages reflection.

Second, we believe that the apparent incompatibility of informal and formal learning can be overcome by linking people's intrinsic interests to extrinsic learning goals. BettrAt puts people's interests at the core: the interest drives content and learning trajectory.

Third, the social aspect of BettrAt software supports learning in networks, with groups as well as with mentors. BettrAt is optimized for learning from and among others rather than individually. The interactions between people on BettrAt are governed by members' relationships to knowledge for the purpose of knowledge acquisition and transfer. This is unlike interactions on social sites, which are governed by social mores. For this reason, networks on BettrAt are conceived of as interest networks rather than social networks.

### Summary continued

#### BettrAt solution space

The functions of BettrAt were designed to overcome the problem set identified in the research. We developed the solution over three phases. During Phase 1 our team conducted ethnographic research. Over Phase 2 we created behavioral, looks-like, and working prototypes of the system and user interface. In Phase 3 we piloted with intended users and iterated based on our findings.

Three key aspects of BettrAt are plans, interests, and people:

Plans - or timelines - show an individual's intentions for getting better at a particular interest and are a record of past accomplishments. They formalize the often chaotic activity of keeping "to-do lists" and "collections" with the goal of achieving what one has set out to do.

Whether it is sports, literature, math, career, or family, every individual has an evolving collection of interests he or she is trying to get better at. BettrAt helps people get pursue their interests as well as discover new ones. People, whether peers or mentors, are critical to an individual's discovery, pursuit and success at learning an objective. Using their interests as the base, we believe BettrAt can help people learn by working within a focused group or with people in their broader interest net.

#### Next steps

Our work-to-date has focused on informal learning. The next task for our research group is to understand how this electronic learning record system we call BettrAt can be used in formal learning situations like schools and with institutions of informal learning.

## What is BettrAt?

A way to get better together faster

BettrAt is a software application that provides a context within which people can improve their learning about the topics and skills they care about.

It is unlike most other learning software which has one or all of the following: highly structured and constraining protocol; games or other extrinsic motivators to "make learning more fun;" orientation towards individual learners; age specificity; and a disconnect from real life.

Instead, BettrAt helps people learn within the context of their main interests, find mentors and peers that share the learner's interests, reflect and redirect learning as one's interests change, and connect existing interests to new ones as life progresses.

The organizing principle of learning on BettrAt is learner-generated plans. A user creates a plan for a particular interest, shares the plan with others who share the interest, and receives suggestions from users and the system on the best way to achieve the learner's goals. As the learner progresses along the plan, this interest-centered network functions as both source and filter for new and relevant information.

#### **Goals of BettrAt**

1. To create a tool that increases motivation and relevance of learning by starting with the learner's interests.

2. To help kids and adults get better faster at the things they're passionate about.

3. To help people cut through an overabundance of information and to focus.

4. To allow people to explore more interests than they currently do.

5. To deliver customized content to help people achieve their learning goals.

6. To create a life-long learning record for reflection and the conveyance of skills and achievements.

## **Background to BettrAt**

#### Schools in the Digital Age study

In 2007, the Institute of Design completed a study on schools in the digital age (SDA)<sup>1</sup>. The SDA report defined an opportunity around kidcentered, extra-curricular, and digital learning devices. It also defined three principles which continue to govern our work:

1. Innovations will come from the edges of the field, not the center.

2. Schools should be nodes on a network, not stand-alone institutions.

3. Innovations should be kid-centered, not test-centered.

The SDA report described a concept for an electronic learning record (ELR). The ELR is a digital toolkit for managing a personal educational history, goals, aptitude, and aspirations. The ELR is the interface that identifies each learner as a node on the network and allows the other nodes (parents, teachers, and peers) to discover and convey the learner's achievements and needs. It also allows the learner to record his or her learning in and out of school and functions as a living portfolio.

This concept was selected by the MacArthur Foundation for design and development. Since then it has grown from the initial idea in many ways - from product to service, from tracking one's past to planning one's future, from being for kids to being for everyone - to become BettrAt. 1. Schools in the Digital Age, Chicago: Institute of Design, 2007 (id.iit.edu/635/ documents/MacArthurFinalReport1.pdf).

## **BettrAt** Opportunity Space

A user-centered design process involves reframing problems as they are normally viewed. In this project, the original assumption was that there is a need for a personal learning record. The reframe calls for a more complex solution that addresses the following conditions:

**The need for reflection:** As a consequence of digital media, there is a disparity between a learner's ability to access information and then to process it. To be successful, a learner requires tools reflect on one's plans and achievements.

**Congruence of formal and informal learning:** Informal learning takes advantage of people's interests and can be enjoyed by both youths and adults. However, it lacks the rigor of formal learning. Digital medial offers the opportunity to take advantage of the strength of both modes of learning.

**Learning in purposeful interest networks**: People often learn best through a combination of peer and mentor relationships.

## The Need for Reflection

#### Information firehouse

We used to think that the problem was a lack of information. There is no such lack today, as we stand at the mouth of an information firehouse. The issue today is how the speed with which we retrieve information online cuts into our time to reflect on its significance. Our exploding access to all kinds of information - emails, tweets, photos, videos, books, bookmarks, links, presentations creates the problem of what to pay attention to. Trying to keep up with RSS, twitter, magazines, books, newspapers, and emails leaves us now needing a tool to help us focus.

The web has made it easy to create, gather, and share information. Applications such as Blogger, Reader, Twitter, and Wikis have given us unprecedented access to information, the tools of production, and the public. The tools to create, find, and share are 21st–century digital applications. The tools for reflection are largely analog devices such as diaries, folders, and bookshelves. This disparity between the tools results in the reduction of time spent on reflection. We're calling this reduction Reflection deficit disorder and we believe it is a barrier to learning.

#### From information to knowledge

Reflection taking time to consider some new piece of data, understand what we're reading, connect it to existing knowledge, and relate it to the task at hand. In some sense, reflection is a type of formative self-assessment. When reflection is too rigidly structured, it can lapse into becoming a formal assessment. We believe a system should enable reflection by encouraging, in a non-pedantic manner, the user to ask questions like: "'What am I doing to get better at this? Is it the right goal? Am I taking the right steps to achieve it?"

## The Need for Reflection continued

1. Assumption: More information will help learning 2. Unintended consequence: Reflection deficit disorder



Since the advent of digital media, it has become easier to create, gather, and share information. This has had the unintended consequence of reducing time spent in reflection.

## **Congruence of Formal and Informal Learning**

#### Informal learning

Informal education can take place almost anywhere, is semi-structured, and is intrinsically motivated. It is interest driven and enjoyable.

It is unlike formal education where an institution: defines learning objectives, structures the education, sets goals, measures progress, and frequently enforces compliance.

The audience for informal education is pretty much anybody: kids who geek out after school on video game forums; who play sports or music or make art; kids in after-school clubs; and kids learning in museums, parks, and from their books. The adult audience for informal education is equally diverse. There are college students whose interests go deeper or broader than what college offers; business people sharpening skills relevant to their job; and all the sorts of people who buy books, read blogs, hire trainers, or take classes to enrich their lives.

## Relationship between formal and informal learning

Informal education has been recognized by the US Department of Education as a critical component of learning. In practice, however, informal learning remains largely a personal endeavor. We believe success in informal learning requires support in the form of curricula, goals, mentorship, and community - common components of formal education. BettrAt supports informal education by combining the structure and external motivation of formal learning systems with interest-driven and flexible informal learning modes.

## Congruence of Formal and Informal Learning continued



Formal and informal learning have the same goals: the education of the user. While their approaches differ, they should not be thought of not as diametric opposites, but as potentially compatible suites of approaches.

## Learning in Purposeful Interest Networks

#### Purposeful interest networks

People have long been learning in informal interest networks, without ever thinking about it. On the putting green with one's golf buddies or when discussing gardening with the neighbor, we have relationships built around the exchange of information around a common interest. The tendency has been to think about this learning mode as a type of Do It Yourself (DIY) - with the focus on the proactive individual. At BettrAt, we think it is more useful to reframe such learning instances as "Do It Together<sup>2</sup>" thus validating the interpersonal component of the education.

#### Social learners in the digital age

Research into gaming and professional communities demonstrates that people are in fact social learners. When offline, people turn to each other to filter, organize, and interpret information. In the analog version of semantic search, people help one another find information that is relevant to the task at hand. It is perhaps for this reason that students still come to class even when all course material, lectures and syllabi are posted online. 1. John Hagel III, John S. Brown and Lang Davison, *From Do It Yourself to Do It Together*, Harvard Business Review Blogs, 18 Feb 2010 (blogs.hbr.org/ bigshift/2010/02/from-do-it-yourself-todo-it-t.html).

## Learning in Purposeful Interest Networks continued

#### Ego, object and interest networks

An online purposeful interest network is a way connect to people through interests and to interests through people. It is a place where a learner can pursue multiple interests as well as discover new interests through their network. It is not like other networks prevalent online today, which tend to be either ego- or object-centric.

Ego-centric networks are driven by social relationships rather than shared goals and interests. For example, Facebook and LinkedIn revolve around personality and social capital. The distinct rules governing socialization on these networks are those of friendship and acquaintanceship, yet the degree of friendship does not necessarily correlate with mentorship or number of shared interests. Thus social networks are not typically known as places of learning.

Object-centric networks revolve around an artifact. There may be activities or interests associated with the artifact, but the organizing principle is the object rather than the interest. For example, Flickr is about photography and photographs and Vimeo about film and video.

#### Specific interest networks

When there are interest-centric networks, they are often confined to one interest. For example, one internet forum may be frequented by programmers working out the kinks of a code and another forum by new mothers mastering parenting. As such forums are traditionally limited to one knowledge domain; they are not places to connect or discover new interests.

## **BettrAt** Solution Space

The preceding section discussed the educational problem space identified by BettrAt. The following pages discuss how BettrAt addresses these opportunities through:

**Plans, records, and timelines:** Learning on BettrAt is defined by plans and proximate goals rather than records and achievements.

**Interests:** BettrAt helps people get better at what they're interested in and discover new interests.

**People:** BettrAt relies on people in peer and mentor relationships to find, organize, and share relevant information within their interest network and focused groups.

## Plans, Records, and Timelines

Plans are chronological collections of things a learner has done and will do to get better at his or her interests. Plans may include books to read, videos to watch, events to attend, challenges to master, notes to self, and anything else related to the interest. A plan is a living selection and sequence of things the learner has set out to do.

Plans help students get better at their interests by conveying intent and eliciting proximate goals. A plan can function simply as a visual reminder of intent, a place online where one has organized one's activities to stay on track, despite the deluge of an RSS feed. Plans are also motivating because by publicly stating intent, one makes an implicit commitment. By eliciting proximate goals, plans create a structure and deliver small rewards with every accomplishment, moving things from to-do to have-done, like checking items of a list.

We think future intent around an interest has a unique value distinct from the value of past accomplishments. People engage more in interests around future intent rather than activities of the past. Therefore, in BettrAt, identity and connections are based around what a learner intends to do rather than what he or she has already done. In our research, we found that people hold onto artifacts for nostalgic purposes, rarely reflecting on them. Imagine the objects that once helped you recipe books for recipes you've since memorized, maps to places you've been, or textbooks you've marked up, they are not much use to you anymore, but they are useful for others. When a friend is learning to cook, planning a road trip, or is considering college, one may dig up these artifacts and lend them out. BettrAt makes this sharing easier by making the artifacts of one's learning public and structured so as to facilitate selective borrowing by others.

A related issue is that people do not recognize how their current interests and activities may prove valuable later. While researching Girl Scouts and their troop leaders, we spoke to one troop leader who kept a detailed notebook of all the experiences and accomplishments of her troops. Years later, when these girls were applying for college, they relied on her to help them reconstruct some of these achievements for their admissions forms. Plans and records in BettrAt represent a scalable alternative to such notebooks. Since most people do not keep records and a personal record keeper is not an option, BettrAt engages with people when they are making plans. Records are simply byproducts of progress.

## Plans, Records, and Timelines continued



### Interests

What do you want to get better at?

The learning experience on BettrAt is interest driven and BettrAt provides a variety of ways to discover new and existing interests. The learner's first step upon joining BettrAt is to add interests to his or her profile. The system then suggests the learner add to his or her network groups and mentors that share the same interests. The learner may discover new interests by looking at what people in his or her growing interest network have learned, are learning, or planning to learn. The learner pursues an interest by creating a plan or adopting someone else's plan. BettrAt lowers the barrier to pursuing an interest by allowing the novice to pre-visualize the potential learning experience. BettrAt helps the learner stay organized by supporting all interests in one place.

There is no inherent value to having students learn in classes, in sync and along one track - it is just how things were when access to materials and mentorship was scarce. BettrAt accommodates different pedagogical approaches to learning. For example, one person learning chemistry might have textbooks in their plan while another has lab experiments, depending on whether they prefer to learn by reading or by doing. BettrAt also accommodates nuance in a given topic area or interest. For example, one student pursuing knowledge in chemistry might focus on the history of the field while another might investigate nanotechnology. In an analogous example from gaming, Mizuko Ito writes in Engineering Play: A Cultural History of Children's Software: "Some kids may orient towards scientific content, others towards knowledge networking, and others towards hacking and tinkering, all with the same gaming title. In fact, it is the ability to specialize and develop individualized and interest-driven trajectories that is one of the most important features of the informal learning space."3 Because BettrAt is organized around the individual and his or her learning goals, rather than by discipline or institution, it allows for customization of particular learning goals to fit with the individual's longerterm intellectual pursuits and needs.

3. Mizuko Ito, *Engineering Play: A Cultural History of Children's Software*, Cambridge: MIT Press, 2009.

## Interests continued What do you want to get better at?



## People

Getting better together

Individual interest networks, groups, and mentors are three important ways in which people learn from one another. Depending on personal preference and learning goals, a person may choose to engage with any or all of these networks on BettrAt.

#### Individual interest networks

Individual interest networks describe the broadest type of relationship on BettrAt. Individual interest networks are comprised of people who are subscribed to the same interests. One can see these people's plans and incorporate components of their plans into one's own. In this way, one student's hindsight can become another student's foresight.

A student can also discover new interests by seeing what other interests people in his or her network are subscribed to. Finding new interests through other people corresponds to the real-world experience of discovering new interests via exposure through friends and other people whose taste we trust.

In the *Schools in the Digital Age* report, we introduced the metaphor of the little red schoolhouse. The little red schoolhouse describes a system of learning where the student is both the teacher and the learner and where the teacher acts as an orchestrator. We have applied this metaphor to BettrAt because as a student finds people to follow and mentor, someone else may follow and be mentored by that very student.

#### Groups

Groups mobilize learners so they can get better faster. BettrAt Groups transcend the broad interests covered by individual interest networks. Groups can be customized to specific learning goals set by the individuals, professional development organizations, or extra-curricular clubs. BettrAt groups motivate and support progress through friendly competition, collaboration, and socialization within the group. Successful groups enable a feedback loop where a member's contributions to a project catalyzes progress that is valuable to the contributing member.

The existence of an on-boarding process - the steps by which a newcomer joins a group - is important to successful group membership, especially in online communities. Groups can welcome new members in a variety of ways. On one end of the spectrum is legitimate peripheral participation, which is the process of initiating newcomers by assigning them low-risk yet productive tasks within the group. In this way, little by little, the novice becomes the expert. At the opposite end is when the group actively mobilizes behind the incoming individual. We saw an example of this approach during our research on a community of macrobiotic dieters. A man joined the group who was sick with cancer, hoping to cure himself

## People continued Getting better together

through a macrobiotic diet. The group donated special utensils to him, shared recipes, and otherwise aligned behind him so his initiation into the group (and the diet) was efficient. In both cases, successful membership involves action by the entering individual and the group.

#### Mentors

Mentor-mentee relationships offer customized and expert guidance to a learner. Mentor relationships are formal relationships that offer personalized instruction "just in time." On BettrAt, mentors are recognized by the quality and popularity of their plans. By looking at a mentor's plan, a student can decide if this individual's expertise is a good match for his or her learning goals. By watching over the student's metaphorical shoulder, a mentor can interject with suggestions and guidance when necessary.

# More self-directed BettrAt interest network BettrAt group Personal goals BettrAt mentor Shared goals

Summary of ways to learn on BettrAt

#### More guided

BettrAt provides a variety of ways to learn with and among others, allowing a student on BettrAt to match earning method to his or her initiative and desire for collaboration.

## People continued Getting better together



## **BettrAt** Conclusion

**Further questions:** The evolution of BettrAt is challenging us to address questions of assessment, content, privacy and certification.

**"Can we use this for school stuff, too?"** The next step for BettrAt is to engage with schools in transforming learning within these institutions.

## **Further Questions**

As we continue to evolve BettrAt to enable informal learning for youth and adults, we are also challenged about how BettrAt could be used in schools and other sites of formal education. In order for it to integrate into these systems, we will need to address the questions of assessment, content, privacy, and certification.

#### Assessment

We believe there is a need on the part of the learner for formative and process assessment. Schools typically conduct summative assessment: an external evaluation of the student at the conclusion of a learning engagement. Unlike such tests, formative assessment occurs during learning and is used by both instructor and student to adapt the learning method and content. Learning in groups allows for process assessment, not just content assessment (known as testing for what one knows). Process assessment is an emergent form of assessment that considers how one creates. shares, and engages in learning and in working with others. Because of the data required, both formative and process assessments are hard to do in analog learning environments, but in a digital learning environment, they could succeed in being the dominant forms of assessment.

#### Content

BettrAt is a platform for purposeful interest networks. It is not a content provider. Therefore, it relies on its users to: form networks, act as mentors, and add content. Were BettrAt to be implemented in schools, two of those criteria would be fulfilled: the student body would form networks and teachers would take on mentorship roles. Content will require third-party participation and BettrAt is conducting research on how content providers such as museums and libraries can engage with BettrAt. Our objective is for these content providers to act as nodes on a student's learning path rather than as stand-alone institutions.

#### Privacy

Online communities predicated on sharing information always negotiate the need for privacy with the functioning of the network. While most online communities of adults are free to draw that line where they please, students under 13 are legally restricted from sharing personal information online. BettrAt is looking for ways that serve the needs of privacy while giving kids the benefit of safe online networks.

## Further Questions continued

#### Certification

Informal learning serves only its own interests is learning for learning's sake - but if people are to apply their learning to advance in career and life, they might require some sort of certification. Certification and the accompanying rigid curricula work for some interests, but not all. We think the BettrAt certification tool should be very flexible to accommodate formal and informal interests.

The issue of certification is closely tied to that of record-keeping. Our research showed that people do not invest time into constructing their own records. We believe this is because in today's fastmoving world, relevance of knowledge may not be long-lasting. Spurred by digital and social media, knowledge is being developed and disseminated at an ever-increasing rate and the time to develop and implement certification measures such as professional certificates of degrees is not getting shorter. Therefore, the speed of knowledge development is surpassing our ability to certify it, requiring us to rely on alternative methods, such as portfolios and other user-generated proofs.

#### **Certification lag**



Knowledge is growing faster than it can be certified, causing a need for alternative methods of assessment.

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## "Can we use this for school stuff, too?"<sup>4</sup>

The National Education Technology Plan of 2010 proposes we rethink basic assumptions about education. It challenges our education system to support individual goals and interests, allow for collaborative learning in cohorts, incorporate formative assessment, and to use digital media to engage and motivate students in their personal learning journeys. BettrAt could satisfy much of this vision, but we cannot do it alone. For it to be adopted at its greatest potential, schools must change how they currently operate. It would not be useful for them to adopt a new technology without modifying the current system. Our next steps are to engage with schools and be part of this transition. We will begin by looking at charter schools that already engage informal learning mechanisms.

4. "Can we use this for school stuff, too?" Quote from Girl Scout using BettrAt during pilot research, Chicago: Institute of Design, 2010.

# Appendix

Human-centered design Select primary research BettrAt contributors

## Human-centered Design

The design approach to entrepreneurship

BettrAt is developed through a human-centered approach to design. A variety of analysis tools assist us in reframing the problem into opportunities and principles. Synthesis tools, such as prototyping, support the development of concepts. Our design approach extends to the way we approach entrepreneurship too. The development of BettrAt was driven by a user-centered view of business opportunities and by a public and continuous reframe of the concept.

#### **User Research**

User research is used by designers to identify and reframe the problem - it tells them not how, but what they ought to design. It is a type of ethnographic research that focuses on unmet needs and design opportunities to address those needs. Unlike research that produces quantitative data used to decide between a known set of choices, user research is qualitative, uses conjectures in the form of prototypes, and emphasizes the development of original insights. It does this by enabling a deep and empathetic connection with the user and a holistic understanding of the user's environment.

The concept of BettrAt came out of such research, which identified a fundamental need in both youth and adults for tools and services that would help them focus their time toward achieving their goals.

### Human-centered Design continued

The design approach to entrepreneurship

#### **Analysis Tools**

Analysis tools such as frameworks, models, graphs, and illustrations help us understand and reframe problems. They allow us to take highly complex situations and break them down into parts we can comprehend and communicate with others. By helping us "see" the problem better, we can make better decisions for its resolution.

#### **Synthesis Tools**

Synthesis is the part of the design process where we explore potential solutions. We begin by generating many concepts in workshops that involve conjectures about future possibilities. We then cluster and look for a logical system of solutions. Concepts evolve through prototyping, which is the making of mock-ups that allow us to think about the idea in a more concrete form than allowed by sketches and diagrams. As the most viable concept matures, we make increasingly higher-fidelity prototypes that test, inspire, and adjust the concept.

The BettrAt concept evolved over 3 years through a series of prototypes. Our beta website functioned for a long time as a behavioral prototype around which we could organize workshops to determine the level of user understanding and engagement. By testing concepts publicly, we learned which features to cut, adapt, and develop further.

## Select Primary Research

Activities and interviews with kids and extreme users

Throughout the development of BettrAt, we frequently focused on extreme users - people whose actions do not reflect the norm but whose actions speak of unmet needs or future practices.

Two selections from our research studies follow.

#### Digital media youth clubs

Direct observation of a digital media youth program in Hyde Park led to insights on social learning. The research showed that a youth seeks help from either an instructor or a classmate, depending on the situation, and that learning can take place through both active and passive social interactions. We also saw how non-structured learning situations fostered organic and passive knowledge acquisition, such as when one kid looked over the shoulder of another using editing software. As students learn they advance from being novices to eventually becoming experts in a topic, capable of sharing their knowledge with their peers.

*Research method:* The research was conducted by Dr. Nichole Pinkard, who at the time was a senior research associate at the Urban Education Institute of the University of Chicago. The research was comprised of extended direct-observation and interviews with youth participating in a summer program focused on digital media learning experiences. A group of approximately 30 students, ranging in ages from 10 to 14, were observed over a period of six weeks as they wrote, produced and edited a video from start to finish.

### Select Primary Research continued

Activities and interviews with kids and extreme users

#### Homeschoolers

We were seeking to understand how groups co-construct a shared experience and present it to the world. We chose to do this research on homeschooled kids, who must take many tests to communicate their learning to the community. We invited a group of homeschooled kids who had done summer activities together to the Institute of Design. We provided them with crafting materials and asked them to create a record of the favorite thing they did this summer. This gave us the opportunity to observe them as they determined as a group what their favorite activity had been and came together to co-construct a story.

The kids' choice of documentation of their experience gave us ideas about emergent models of certification and self-evaluation. The artifacts the kids chose represented a sort of bottom-up rubrics, reflecting their own perception of what had been most important rather than an evaluator's. We also saw how the act of creating this collage was an opportunity for self-reflection for the kids. In determining what their favorite activity had been, they had the opportunity to consider activities and skills they would like to develop in the future. *Research method:* We assigned an activity to groups of homeschoolers and observed them as they carried out the activity and presented their creation. We chose an activity-based approach because with child participants it is more useful for the researcher to learn by watching them work then to ask them to recount how they did or would do something.

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BettrAt: Platform for interest-based learning

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