Education virtual communities

Stanley Andersen

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Education Virtual Communities

By

Stanley Andersen

Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Information Technology

Department of Information Technology
Rochester Institute of Technology

August 2000
Rochester Institute of Technology
Department of Information Technology

Master of Science in Information Technology
Thesis Approval Form

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Abstract

Distance Learning is a prime area for expansion of a new internet business/community model since there is currently no broad-based application servicing this function. The goal of this project is to investigate and prepare the basis for a proposal to a financial backer such as AT&T or one of the large internet service providers. A major part of the paper will investigate the current state of the distance learning internet environment and how to improve it. One of the main improvements concerns the need for a standard interface, which should include a learning tool such as RIT's colloquy software.

Continuing/lifelong education has become a staple in the information economy. Most people realize that increased education levels relate directly to increased income, which provides increased buying power. A service provider must determine the needs of the distance learning community and an effective and efficient method of delivering the product. From the perspective of a business owner, whether it is a university or a computer seller, a loyal customer within various stages of the lifelong learning curve is a profitable commodity.
Virtual Community (VC)

Defined

Community is that physical space and individuals that are a part of everyday life. It is a situation where the individual knows their neighbor and others in their geographic vicinity. The relationships that evolve from the interactions within the community make life easier both in efficiency, cost and quality of life. Normally the relationships are maintained between members of the community along lines of shared common interests or goals. Whether the individual learns the best place to shop, the best service station for car maintenance or the most reputable personal computer dealer, all lessons are gleaned by interactions within the community. These lessons are then shared with others in the community for all to benefit. A person’s knowledge of their physical community lessens the further they roam from the area they frequently inhabit. For example, the likelihood that a person has the same knowledge of the services in a neighboring town versus their hometown is slim.

Within the confines of the internet the definition of community is difficult to base on geography or physical space. It is best to use as mentioned earlier the relationships between individuals with similar interests and goals as the main characteristic of a community presence on the internet. Just as bicyclists will congregate at the bike store on weekends so will the same individuals “meet” at the bike shop on the internet. This tenet is the basis of creating a “virtual community” (VC) where people of like interest can “meet” and exchange ideas, provide support and gain a benefit similarly to the physical communities where they live. ² [Hagel,Armstrong, p 18-19]

The internet as it is currently configured mainly provides information from the vendor’s standpoint and not the buyers. This is the current weakness of the internet. Individual sites are set up to serve the vendor and not the buyer or the community. In a physical community the buyer has a much better support structure to determine where to obtain the best product or service and which merchants are worthy of their business. The vendors must support the community or else the community will frequent a competitor.

Virtual communities are intended to provide the same social support structure as a physical community though in a more focused way. The VC must focus on an interest or goal that will bring a group of users together that have the numerical size to act as a community. That means the size is such that it can support vendors through the member’s purchases and sway competition and pricing through the force of their numbers. Though physical communities are less focused than on-line environments this same effect can be observed in physical communities where a particular community focus creates higher demand and greater competition. A good example is the difference in high tech products between physical areas such as urban versus rural communities. For example, someone living here in Melbourne, Florida will travel to the computer super store in Orlando to receive a 10% discount on computer parts. The benefits a VC creates goes beyond economics; people connecting within the environment can support each other by providing feedback, emotional support and lessons learned in the area supported by the VC. For example, members of a computer enthusiast VC could bargain a better pricing for components that an individual. The organizer could provide space within the VC to share lessons learned in building various projects, answer
questions from members and coordinate physical conferences for the users to actually meet with each other. [Hagel, Armstrong, p.91]

**Steps to create a VC**

Based on the definitions from NetGain, the state of a majority of on-line sites sponsored by groups are in the first phases on the 4-phase growth of internet business. There are signs that others have realized the power of the virtual community paradigm as not only a good social example but as also a financial benefit to those that serve the community. In each phase an intermediary or organizer, such as a company or organization, maintains the environment and would collect revenues to support the infrastructure (people and hardware) necessary to maintain the environment.

Phase 1 is when a very small number of users (several thousand) that have a common interest frequent a specific web site which provides a varied level of discussion, information and limited services. And example of a web environment would be the Astronomy Virtual Community where wide ranges of issues that are based on astronomy are available. [Hagel, Armstrong, p.91] This type of site might receive some content from its members and additionally may receive some type of income from the targeted advertising that is available within the site space. The users will be able to provide some information to each other concerning products and services but they have little influence on the pricing of vendor’s offerings. At this phase single vendors may dominate the inputs to the members and thus limit the benefit of the group working as a social block for various purposes. Additionally, if the users are not motivated to provide content to the site it will become an unsatisfying experience and the members will defect to other sites to fill their needs for interaction. So that for a environment to progress through the phases it must maintain the interest through engaging content and leverage the number of individuals to provide benefits that can’t be found in other areas of the internet. [Hagel, Armstrong, p.86-90]

Phase 2 builds upon the ideas of phase 1 and brings together a greater number of members and vendors to support the group. This phase is characterized by a concentration of members within an interest area on the order of a million individuals. This type of group could begin to exert their own influence on the services and products that are provided to them. This phase is also characterized by the ability of providing service and contacts to individuals within a specific sub-group. [Hagel, Armstrong, p.91-97] For example, CompuServe, if it was still an independent company from AOL, with its 2.2 million users could be considered an organizer who would have the concentration of users to exert price and offering control on external vendors. Within CompuServe there was the ability of users to splinter into specific chat areas and receive “bargains” that were supposedly only available to members. To gain the momentum to progress to the next level most environments will need to either provide incentives for users to transfer to their site or acquire sites of users to increase their influence. This is the tactic that was taken by AOL to gain a greater number of members to move to the next phase.

Phase 3 is the concentration of users to an effective critical mass of people, in excess of 20 million users, with the intent of providing content to have them remain within the confines of the specific environment. The people within this area have “splintered” into interest groups that are focused to particular topics whether it is sports, video games, travel or economics. Within these areas there are significant numbers of members that provide inputs and the organizer schedules specialized “gurus” whom also provide content that the members value to ensure that the members return. It has been
suggested in NetGain that AOL can be considered to have at least the numbers of members to effect a Phase 3 community which could influence the vendors that are allowed access to the environment. Though there are questions that the service provided by AOL is really looking to benefit the users within the community. It would appear that though the numbers and the ability to maintain the users within the environment are truly within the ideals of phase 3 of the progression questions as to the direct motives of AOL are first and foremost the profit motive and not to socially benefit the users. 7 One of the driving economic factors that support the services that an AOL or other providers within the phase 3 category is not the advertising or micropayment (to be discussed later) it receives on goods sold through their environment rather the payment for information concerning users preference which considering the large scale of the population can sway the way vendors market to this group. 8

Phase 4 is considered to be viable when the users of the community are what drive the dynamics of the interaction. The interest groups have related areas that service the members needs so that the majority of time spent on the internet is within the confines of the community. One of the commodities that would be used to support the infrastructure in phase 3, sales of information on user preferences, is transferred back to the user. The question is whether an AOL can gain enough “trust” in the user for the user to continue to stay in their environment. If the consolidation continues to this phase the “virtual community” has truly arrived. 9 [Hagel,Armstrong, p.104-109]

Benefits of VC

The benefits of a VC are contained on two levels, social and economic. These two levels are inexplicably intertwined because without social benefit for the member they will not reside in the environment long enough to provide economic benefit and the environment will collapse. Without economic benefit there would not be the infrastructure to support the social benefits of such an organization.

The social aspects that characterize community enable the ability to reap economic benefits. If the VC is not appealing to members on a social level they will not stay with the environment and there will be no possibility for the organizer to profit. The ability of members to exchange ideas and information with others helps create the feeling of belonging that stitches real communities together. Events such as conferences and fairs stitch a physical community together with common experiences and the VC can create events would normally not be possible in a physical community for the same purpose. Examples of virtual events that are considered community builders are real time chats with famous persons, interaction with advisors outside of the “normal” day (meaning 8 a.m. to 5 p.m. at the member’s local), or live broadcasts from geographically distant events such as concerts or sporting events to name a few. 10 [Hagel,Armstrong, Chap. 3-4] All of these examples can be seen at different sites that are currently available and the “Yahoo” Sports Pages are good examples of this type of marketing 11

The reason for providing this type of service is twofold. First to maintain users within the environment which when maintained as a statistic (total time within the environment) viewing advertising) that is used to set advertising rates within the internet space and second though not of lesser importance to provide social benefit to the user.

As mentioned in the discussion of growth of a web site to VC the organizer or owner of the site has several avenues for profit within their environment to support the social
aspects. These avenues can be categorized in three basic revenue generators, advertisements, micropayments and information sales.

Advertisements are those that are currently displayed on most web sites take the form of banners, extra spawned windows or testimonial type embedded articles (vendor developed). The amount of payment received would be driven from both the time an individual spends within the environment and the traffic that is generated within an environment so that as a VC grows so would the income from these more classic advertising revenue sources. For example at the SpaceDaily.com site which would be considered a phase one environment the going rate is $250-500 per ad on the home page and $700 site wide so that 7-8 small ads can be place within the site and generate several thousand dollars a month. Multiply the costs for longer access times and higher traffic and it is easy to see the profits that can be generated in the environment from banner/spot advertising can begin to support the personnel who maintain the VC.  

The micropayment is the relatively new paradigm that is assisting the economics of the internet. Since there is relatively no overhead in transferring information over the internet, some method of paying for the infrastructure was needed. This method is “to tax” each user or vendor for the right to access users in the environment. The idea of micropayment in the VC is to have the vendor provide the VC organizer a portion of the revenues it gains from individuals that are directed to the vendor’s product through the VC.  

The sale of personal information appears as one of the real growth businesses of a virtual community with the goal in phase 4 of turning the profits from this sale back to the owner. Until this point the organizer would use the profits from these sales to support the infrastructure. As the environment grows, meaning numbers of members, so does the value of the demographics and information to vendors for targeting product development and services. Targeted advertisements on average double their worth to the vendor, for example, if a vendor knows that there are 2 million members in a VC and all of them could use digital cameras for enhancing their experience within the environment the vendor could tailor a production run at this group. This would maximize their profit since the needs of the users are known versus projected from incomplete data.  

The VC economic model is ideal for providing distance education to student at a reduced cost for the overall education experience. The organizer of an educational virtual community would need to heed the phases of development while maintaining focus that the furthering of education is the goal of the E-VC and not generating profits. A key point for the E-VC would be maintaining students’ interest in distance learning as a substitute or complementary method for the learning experience.

**Distance Learning**

Distance learning has been providing the opportunity for people who could not for various reasons attend traditional education at all levels. Though for the individual looking to continue their education there is not a single place to go either geographically or on the internet to help them determine a course of action. The individual can hear about a limited number of programs from various media sources but there is no advisor similar to the one in place in most American high schools to assist an individual into the myriad of choices when considering distance learning. This “hit or miss” process is more
likely to discourage prospective students than it is to promote further education. The physical campus has other social structures to support the individual to attain their goal that characterize the community structure of a campus. An education site that is developed for the individual rather than the institution is the goal of an on-line virtual campus.

Need for Education VC (E-VC)

The internet is becoming the main tool for providing distance education though it is still in an early stage as is the use of the internet in general. One need only use the University of California Berkeley Distance catalog as an example to see that now 70% of the courses use an on-line presence (email, internet access or an AOL account) in some manner to deliver the course. This is compared to 10 years ago where none of the Berkeley classes were linked to the internet and the main delivery system was paper products such as the books, syllabus, and instructor communications. 

The flexibility and efficiency of using the internet to deliver an education program is obvious. The lack of geographic relationship creates the need for a VC to support people entering into the education experience.

The question for any individual entertaining attending a distance learning institution is which is best for their particular situation. Which is most likely to support their particular needs? By looking at the specific sites from the individual institutions a prospective student would think that all are the same “outstanding”. Since geography and time of delivery of classes are not normally constraints for distance learning other issues come to the forefront. Issues such as cost to complete a program, quality of teachers within the distance program, constraints of the specific program, credibility of the program within the field of interest are the real issues for distance learning programs.

Distance learning has drawbacks that can allow for substandard service to propagate where in a physical school setting the mass of students/faculty will eventually correct.

For example, on-line students that experience substandard service from a school or university has limited recourse since they don't have a group to ally themselves with to effect change. Distance learners don't have colleagues to easily talk with to solve basic coordination issues that others that attend physical classrooms take for granted; from finding good deals on books, learning teacher idiosyncrasies, to finding empathetic listeners to relieve stress. The goal of an E-VC is to provide the “campus” that is not provided to the distance learner with no additional financial burden carried by the individual.

Accreditation of the institution is an issue for students who require their education for furthering their careers. The E-VC would list institutions for their rating in US News and World Report and other widely used accreditation catalogs. This would help the student who is looking for monetary rewards after completing a program from determining which institutions program is widely accepted. Institutions within the E-VC would realize that this information is important to a student and highlighted by the E-VC and work towards improving or attaining the accreditation.

Trust is the main commodity that is “sold” to users by the E-VC organizer. If the student can believe that the E-VC will be providing them the unbiased answer to their questions
then they will return. Further that the E-VC should ensure that institutions are making the best use out of the possibilities of the E-VC.

The following opinion of Dr. Steven Berkshire from Alaska Pacific University talks to the requirements of the E-VC from the classroom perspective.

It isn't whether on-line classes threaten quality, it is whether the faculty ensure that the students are getting a quality environment to learn in -- whether it is via internet or in the classroom. The internet is only a tool for allowing students to learn. It isn't the end result.

It does take a different perspective for a faculty member to develop and teach on-line. If you only lecture, you will lose the students -- they don't just want to read a lecture. Discussions, assignments, postings, and links to other resources add to the learning. This isn't any different than the classroom. Faculty should add variety to the learning environment wherever it is. 19

The Western Governor’s University (WGU) discussion in “The chronicle” highlights the need for an E-VC. The providers will not question the quality of education whether and they will surely not tell inquiring users that some employers may not accept their program as a quality education. The E-VC turns the table so that the user's interests are of primary concern and not the furthering of a particular institution or commercial interest. The E-VC can also assist institutions in incorporating “best practices” to raise the level of the provided education. 20

The method of “assisting” institutions in raising their level education delivery is allowing unbiased feedback from the organizer who is independent from the schools and service providers and reminding the institution that the student does have choices. Also the E-VC can provide access to tools that are more uniform and thus make it easier for the student to learn. This benefit can only be created though with amassing an audience to service.

The E-VC needs to be an environment where people wishing to further their education can meet and exchange information with other students as they would in a “normal” university setting and leverage their numbers to gain the best price on education and education-related goods and services. The goods and services could be computer equipment, time saving devices and services to make the individuals learning experience more effective and less stressing. These options will be discussed more fully in a later section of the paper.

Just as the institutions will learn that the student has choices so will vendors learn this lesson. The E-VC will place the student/consumer into a more proactive role in relation to the producer. The preferences and experiences of the student will influence the services that are offered and the price of those services that would be considered reasonable. For example, in a normal city a school that doesn't provide a useful education will receive a reputation as a substandard institution and eventually fail. In the internet environment it is currently very difficult for current students to exchange this information to each other and avail their experiences to prospective students.

Students looking to further their education in the distance learning environment have no support structure to assist them in determining which path would best serve their
situation and abilities. The E-VC would fill this void with both a guidance/advising area and a “student union” or “coffee shop” area that would allow students to interact and chat about various topics of interest that are not necessarily education related.

To create an effective E-VC there needs to be an entity to serve as the coordinator of input and also as an overseer of the E-VC. In a VC this person would create the environment for profit, in the E-VC this position and the infrastructure would be not-for-profit though the sellers of services would indeed be driven by the profit motive. Ideally the organizer of the community would set up a portal that was not for profit thereby creating the most social benefit to the student community. The vendors, and service providers would subsidize the student’s interaction and access to the learning experience. I’m not sure I understand your point her. Are you talking about a VC apart from any college such as RIT? Or are you talking about a service provided by the college for its students? [Prof, My mistake for putting the schools in the original list and the idea is the E-VC is to be independent from any school., Stan]

The following examples are intended to provide examples of the state of distance learning on the internet and highlight their deficiencies further stating the need for an E-VC.

**University of Wisconsin**

A good example of a university attempting to service on-line customers is the site provided by the University of Wisconsin (UW). The UW site purports to have other programs and support shown but is very hard to find anything other than Wisconsin information. 21

Though well meaning individuals who look at the site will think that they can easily find information concerning distance education opportunities rather than the potpourri of information that is available at the site. The main UW site has a somewhat intuitive organization to it for finding information concerning their programs with a glaring exception. As one attempts to determine the ranking of the university or the accreditation of the programs it supports is not available.

To their credit the university has an advising area that attempts to assist the student in deciding between the benefits of various programs within the Wisconsin University system though the advising is based on email and not a truly interactive activity.

**Western Governor’s University (WGU)**

This university mirrors the current association of Western U.S. universities that have some reciprocal agreements concerning tuition and coursework. The WGU model for delivery allows students to receive credits for work or life experience which is not a widely accepted practice for those pursuing accredited degrees. This is not highlighted on their web site and they only divulge that they are applying for accreditation for their programs. For students looking to further their careers and education accreditation is paramount for acceptance at follow on institutions. The university does not currently provide many complete programs, 1 Master’s and 3 Associate’s. 22 This cannot be considered a one-stop shopping point for those looking to further their education.
To their credit the web site that they have developed has a very straightforward layout and is conducive for individuals to obtain information quickly. The navigation is repeatable across pages so that initial users can quickly change threads using the connections across the top of each page and drilling down into a subject always enabled by selection on the left hand side of the active page. Additionally, the areas of support that they offer are much like those that should be offered in an E-VC (e.g. a student union, bookstore, on-line catalog, ability to contact via e-mail) 22

Alaska Pacific University

The Alaska Pacific University objective is to serve the state's population, which is widely separated geographically. Though this is not a classic distance learning program since one week at the beginning of each semester is used for required on-campus socializing with your teacher and classmates prior to beginning studies. This is the universities' method of creating the feeling of community quickly through direct contact of the students. 24

APU offers very few degree programs but forecasts many more as the school's distance learning program matures. The university does not provide information concerning accreditation on the main web site though an article can be found through the site search function that states that the program accreditation is through the Northwest Association of Schools and Colleges. Though students of other states might consider a trip to Alaska too much of a burden (though not all). 25

The web site is not well set up for ease of navigation with a total lack of changing thread without returning to the home page and a non-uniform method of drilling down and up through particular threads. This forces the user to make additional selections when to switch topics.

National Technological University (NTU)

The NTU is by far the most credible site in the providing multi-school service to the student focusing on professional development courses and graduate degree programs. The NTU has many of the educational services that would be required for the E-VC to become a useful environment. The web site appears to have been created 4 years ago and focuses on only on coursework. The site organizer's have created methods for students to transition between study programs and maintain personal information that normally causes the most issues for students. The NTU does not rate the schools that are available so that student must trust the university that it has reputable members. It should be noted that many of the members are rated in the US News and World Report graduate survey though not necessarily for the available programs. 26

Do not emphasize accreditation too much. [Prof, Agreed per our email I have a paragraph earlier to quickly discuss this point, SJA]

These examples are important in that they highlight the current lack of focus on the student's needs and the biased approach most institutions portray to the student concerning their offerings. A student looking for a distance learning program that fits their particular needs should not have to use this one-sided approach towards this important decision in their life. The E-VC should assist students in picking the school that can serve them best. This decision process should weigh the factors of quality of
education, student’s capability and preferences and the student’s financial capability as in a classical secondary school advising situation.

These examples do not answer the question of complementary services such as books, computers, time saving services and internet access. If a student did not have internet access, how would s/he find these sites? [Prof, People can even use the local libraries for free internet access particularly for this function. SJA] These investigations are left up to the student to work through and to the novice distance learning students are as daunting a task as the course work itself. Additionally, some institutions use these services as methods to further their own profit as can be seen in the typical cost of books in most university book stores when compared to offerings from web companies such as “ecampus.com.” and “bestbookbuys.com”. Have you tried any comparisons. I did for my course at RIT. Our bookstore was in the middle of the best buys form bestbookbuys. Com (I think that is the name of it). With shipping and handling and the fact the NY does not change sales tax on textbooks, RIT Campus Connections was the cheapest. [Prof, Both my wife and I have done this often and you have to be vigilant because it is like you said sometime the “best book buy” is not the best, SJA]

The state of support to distance learning support in relation to the above sited requirements is fragmented at best and neither business or education groups developed beyond the 1st phase of community development. NTU is a possible exception in that it may be considered entering phase II considering the total numbers of students serviced in their various programs.

Need for interaction

The E-VC needs to support the students by providing the interaction areas whether for the classroom or informally in the virtual coffee shop because otherwise the students will not feel attached to the experience. This is the problem not only for E-VCs but also for physical campuses, to quote Phillip S. Dunston, an assistant professor at the University of Washington:

Even students who are able to come to campus, but have little or no time to interact with faculty or classmates outside of class express a conviction that they are missing out on valuable interactions. I have no fundamental problem with an individual gaining some certification of competency, but I do believe the distinction between that and a university degree that thrives on face-to-face interactions and assessment of the student’s application of knowledge to address open-ended, real world problems must be maintained.

This section of collaborative work seems just thrown in here. It would seem to merit its own section. To me, the issues E-VC do not cover collaborative work in a course as I understand the E-VC is supporting the students needs outside of the course. [This wasn’t meant to be a collaborative work section so much as highlighting the need for collaborations so I rewrote the paragraph. SJA]

In-class group discussions and collaborative work are two of the most enriching portions of physical classrooms that are still somewhat clumsy on-line. Several workgroup software solutions are available such as Microsoft NetMeeting (when linked with ICQ) which require infrastructure server support to support which begin to bridge this deficiency. Interactive point to point capabilities for students-to-student interactions can be easily upgraded using tools such as ICQ and PalTalk. These freeware programs
provide a capability in exchange for basic personal information and some minor advertisement access. The task will be to make the client side of the software easily configured over multiple platforms which is always formidable so the use of commercial entities should put deflect the risk away from the E-VC.

Technology which allows people to speak and listen to each other, listen to a lecture, and ask questions is out there. Given the right instructor and the right technology, one could have a solid class -- you attend, and you can talk to and hear other students and the instructor. The instructor can take control of your computer to demonstrate and help you, too. But is this really the technology that is being used by students at home? Or do students have to go to labs where this equipment is specially set up (in which case why not just take a regular class)?

-- Anonymous, (posted 5/5, 11:39 a.m., E.S.T.)

There are software applications out there for students to use to create a more interactive environment and in most cases showing them that it's available is all that is needed. It is the requirement for the E-VC organizer to pick the best applications and make them readily available for members. Do you mean the software environments to be used within the course or outside of the course. I think the university and faculty still have dominance in picking the software for use within a course. [Prof, this is directed at the delivery tools not the teaching tools,SJA]

**Benefit of gravitating personnel**

Bringing together a community of distance learners provides a benefit to the students and those vender products and services. The candidate audience for an education VC could be stereo-typed as balancing a full home/work schedule and attempting to further education to enhance their income through certification programs, continuing education and advanced degrees. As mentioned earlier, this is a lucrative market for vendors and they will be willing to access this group providing funding through various methods enabling the provision of community social services free to members. To properly support this type of environment, infrastructure is required to provide content and access to services. The content that would be needed to entice students to stay within the community would be driven both from the school and the need for both information and relief from the grind of distance learning and receiving real-time advice/counseling.

The eCampus.com web site is beginning to cover some commercial products the E-VC services would provide where the offerings are not just academic material but the company also sells PlayStation © games and has limited hyperlinks to music. These suppliers of services would provide micropayments to the E-VC and the student benefits with bargain pricing for schools books and other services. Excuse me, there is no shortage of game and music sites. Is this part of the educational environment of today?[Prof, Unfortunately it is but part of a E-VC is to maintain the student within the environment and a student doesn’t study all the time and any products bought/rented come back to the campus, SJA]

I must admit they have a good price for my book The Hardware Bible (5th Ed.) by Winn L. Rosch. They were the cheapest by a few pennies.[Prof, The power of the group should enable a higher percentage of saving or at least that is the idea, SJA]
These on-line, education-related are important services since they relieve the consumer of the commuting requirement of classical education on all levels. Any service that can provide the consumer with time efficiency is also an area for marketing which would provide infrastructure costs of education VC (E-VC). By taking micropayments on all for-profit services provided through the E-VC and advertising support the organizer should be capable of supporting the infrastructure. 34 [Hagel, Armstrong, p. 48]

**Education Virtual Community**

Within the E-VC the specific areas that would be supported to provide quality service to the student and grow as an entity would include at each education level, schools, coursework, services, products, advisors and chat area. The natural breakdown for the education level is Vocational, General Education or High School Equivalency (GED), Bachelor of Science (B.S.), Master of Science (M.S.), Adult Education and Corporate Training.

Within each level of education there are different issues that confront the student as they progress through their program. It is most likely that the students for the vocational and GED programs would be the least computer savvy and least capable financially to take advantage of the benefits of the E-VC. The important point to take from the students at the lower end of the education ladder is that if the experience is positive they are most likely to return to the forum to continue their education. The possibility of a candidate progressing from a GED to an advanced degree would provide the community with a participant for at least a decade. This makes the availability of the E-VC to those at the lowest levels probably the most profitable in that they provide the possibility of a participant with the longest retainability. The following discussion provides some flavor of the offerings that should be available on the E-VC web site and the software that would be needed.

**Services**

There are services that assist students within a distance learning virtual community, e.g. chat areas for topics such as tutoring, shopping, information, counseling (non-school related) and standardized testing. These services provide a two-fold benefit in that the both serve the student and can generate revenues to support the infrastructure of the E-VC. When initiating the E-VC these services would begin with core activities that directly impact the student.

A type of service that will be proposed is standardized testing and preparation. As shown in Figure 1 and as is intuitive all levels of distance learning have some sort of testing associated with advancement. Within the E-VC the idea is not to connect the user to the commonplace direct connect to a company website. Rather the E-VC would provide some background on admission testing required for particular course of study, which in turn would lead to reviews of particular test preparation programs that are based on users inputs. These tests range from the GED for high school level equivalency, SAT for College to the GRE or LSAT for Graduate School. This way a person can make a more informed decision concerning whether they need to use a particular test preparation program or not. Are we talking about SAT, GRE, etc. or general test taking strategies? The name of some common exams would clarify issues
for me. [Prof, Hope this answers your question and the web site was developed with a feature for GRE testing, Stan]

Once the individual makes their own decision concerning the particular service and the particular vendor it is the E-VCs responsibility to account for the access the environment has provided and receive the due monetary credit. It is the goal within the E-VC that the student should receive a better price for the vendor’s product since the massing of consumers within the E-VC should entitle the group to receive a more competitive price than an individual.

![Web Site Cube of Service](image)

**Figure 1 Web Site Cube of Service**

**Products**

This branch would cover the gamut from campus items to home office to recreation items for the students within the E-VC. The initial offerings would concentrate on the products that provide the most benefit to students and those which are classically marketed towards students. The products most directly beneficial to students would cover books, software, computers, supplies and internet service. Those other products that students also spend money on that should be promoted include sites that target college students the product area can expand to cover games, music, music related hardware, phone service and travel. This area is fertile for generating revenues for the E-VC.

**Advisors**

Advisement in the classic sense is the one area that needs financial support from the other more commercialized areas to succeed. The offering of **trustworthy** advising services will put the E-VC further ahead than any other site since students will return to
receive quality information. The noteworthy point concerning this area is the personal aspect that must be provided to the student in this area. The advisors will need to be trained concerning options within their particular area of expertise. The advisors would need to have access to information concerning the both the student and the available schools. This would require the students to allow the advisors access to their test results and previous coursework. Without this type of access the quality of advising would suffer and the direction of study would not reflect the individual students true capabilities. In creating the E-VC manning the advising capability will drive growth as much as the hardware issues of hosting the services or providing access to quality institutions. This would be the most difficult to find and by far the most expensive as I assume we are not taking about students advising students. [Prof, I agree, that's why there is a need to generate profits from other areas to finance this function, SJA]

**Chat Area**

The “Chat Area” or “Virtual Coffee Shop” is an integral part of creating an E-VC and provides a “cooling off” area similar to coffee shops and pubs that are central to most physical campuses. To fill this function the Chat Area needs to allow for the maximum amount of socializing between students. Types of activities that would occur in this area include; discussion groups, live events and internet games.

Too abrupt a change. [Prof, Agreed hope I have fixed this problem, SJA]

To assist the reader’s understanding of what is meant by an E-VC, an example site has been created. This web site illustrates the breadth of education opportunities that can be offered on-line and as important the wide ranging support that has been discussed within this paper. The site itself is intended as an example so that branches are only developed to the point that the reader may understand the intent of the branch. For example the services area would show the available sub group areas but would not populate the specific pages within the subgroups. To further the E-VC discussion, the ensuing sections break down the example site highlighting the important issues.

**Specifics of Web Environment**

This site was created to show an example of the layout that would service the E-VC. There are various links based on actual companies that have been manipulated so that authorizations would not need to be coordinated though actual links to institutions and some services have been maintained. This ground work and coordination with vendors would be accomplished by the organizer prior to public access to the E-VC to legally utilize references to proprietary information. The overall look of the site would be more graphics oriented though for this project the goal was to show the interconnections and services and less the graphics which are easily envisioned.

My initial work began after work understanding the FrontPage © software and learning the basic capabilities of the application. Much of the understanding I have acquired was based on use of the available help text and the book FrontPage 98 Bible by Elderbrock and Bodenisek.

The web site was designed using a theme and would need to have a server enabled for the active elements such as counters and other monitoring functions to properly work. The decision to use a theme occurred initially after working on drop down menus and
hover buttons for navigation. This seemed less intuitive and the idea to have a two level navigation on each page except for the end stub of a branch. After looking at the webbots that were available that made the navigation and selection very simple for the user. All pages except the home page have a horizontal navigation tool bar for moving between branches at the top of the page under the banner describing the subject of the particular page. Additionally, all pages except end of branch stubs have a vertical navigation tool bar to move between all sub-topics of the branch. Topic information is filled in as examples of the design throughout and when the submittal would be redundant to another page at that level the phrase “this is just a stub” is placed on the page.

**Project Web Site Hardware/Software**

The web environment for the E-VC would need web server software available to enable the active functions that need background processing such as hits per page and form processing. For the project the Microsoft personal web server 4.0 © software was loaded to provide the functionality of active elements.

The web site has been provided with this paper and has examples where they are necessary to illustrate the type of service that would be presented to students within an E-VC. The web site is in the “project_final” subdirectory of the msit_backup.zip file that was provided with the electronic copy of this paper. The one known problem with the web site that was not solved was the navigation back to the “HOME” web page works in FrontPage © but does not resolve properly in browser viewing.

For large-scale operations the ISP that would support the site would have better insight into the level of loading that would be need servicing and which server hardware/software combination would be most applicable. To scope the hardware/software required by the host for the proposed software for the differing phases of E-VC growth is beyond the scope of this project.

**Financial Benefit**

To support the accrual of micropayments and advertising payments for a large internet service provider or AOL-like firm various traffic measurements functions must be in place. To facilitate the accrual of payments, hits per page and taps on all links to revenue generating sources will be monitored. The methods for monitoring the status of these types of transactions are available within FrontPage and would be tapped back to a status page. Since the vendor will not generate sales on every hit there is a need for an additional piece of accounting software on the server to track the vendor sales when they originate from the E-VC. Companies such as Amazon.com have similar accounting capabilities that would be used for this procedure.  

**Benefit for Server Host**

The server host has a three-fold benefit for supporting the E-VC, the host has traffic that it can advertise to other service providers and vendors. Additionally, information concerning the members of the E-VC would be available to the host at zero cost effectively providing information they would normally have laid out funds to acquire. The server host would create good will (providing they do a good job) so those members would be more likely to use other services provided by the host such as internet access.
The host could also look to use the E-VC as a way to bundle their own services [Shapiro, Vanian, p73] In each of the benefit areas the organizer needs to ensure the objectivity of the E-VC is maintained with regards to servicing students otherwise the basic tenet of student trust in the E-VC will be undermined. In other words the organizer must ensure the host server does not attempt to take advantage of the situation and bias sales towards their products.

**Supported Branches**

The need for an easily navigable site that parallels between curriculum levels is important. Students should feel as familiar whether they are in the Graduate area or whether they are in the High School equivalency. This idea of similar look and feel will make the learning experience remain a comfortable and “known” quantity for as long as the student is within the E-VC. Institutions will have guidelines for the style of access that they provide to the student if they wish to access the student body of the E-VC.

The E-VC supported branches are as shown in Figure 2 below. The idea is for students to first navigate to the home page and at that point using the options illustrated in Figure 1 begin to direct students through their choices. The figures shown in the discussion are derived from screen captures of the Microsoft FrontPage Explorer Navigation view. As discussed earlier the main branches are based on education levels with mirror selection under each main heading. For this reason only the graduate student level of the web site was created with the understanding that any other branch would have a similar look and feel from the perspective of the web designer or the student, the intended customer.

![Virtual ED](image)

**Figure 2 Supported Main Branch Selections**

As was discussed under the E-VC description of the “Cube of Service” each level of education would have further branches as shown in Figure 3. This will allow the student to decide on schools, individual classes, services, products, advising and chat area (named coffee shop). The navigation was set up to allow the student at any time to return to the home page or back out one level in the navigation.

A feature that would be added throughout the site would provide a feedback function for the student. This feedback function would normally be a student dean at a physical campus allowing them to question the fairness of a particular teacher or the possibility of completing a specific degree program within the advertised length. This is the speak out feature, created to take the place of word of mouth at a regular university it allows students to post opinions concerning specific teacher methods. This would be a
moderated posting so that the comments were constructive and would allow students to gain understanding they would normally obtain at a physical university. I think you need to give a little detail of the proposed moderation so that a student does not think it is censorship. Are there some rules that need to be followed [Prof, See following, SJA] The reason for the moderation is to ensure the fairness not only to the free speech of the students but also to guard the teachers. The types of rules of moderation are those enacted for current on-line chat sessions such as; no profanity, and no personal criticisms. The E-VC would add specific instructions of limiting discussions to objective items such as workload, and method of teaching. Additionally, the students’ comments would hopefully be used to promote those teachers that do an excellent job and demote or remove those persons and institutions that are substandard. The speak out would be specific to an institution, product or service and will be illustrated in the “Grad Studies and Grad Courses” though would be available throughout the site for user input.

The format on the comments would be text driven with a survey type submittal page similar to that used for sequential chats in RIT’s Colloquy software.

![Diagram of Grad Studies Selections]

**Figure 3 Supported Grad Studies Selections**

**Schools (Graduate)**

The Schools selection for each level will be representative not only in quality of education but in range of costs. The design goal brings together all of the available schools for the student to pick from displaying attributes that make the decision easier since cost is sometimes factors heavier than quality of education. Figure 4 shows that the proposed set of school options would be available. As the number of schools increased it is possible that the branches would need to grow to support the specialization of education options available.

Symbology will be added by the organizer next to the hyperlink to the school’s home page to further assist students in their selection of a particular school. The symbology will cover quality and cost of a particular program. The first symbol will consist of a graduated scale of stars with one star relating to a low-level school through four stars denoting the highest level. A hyperlink to the U.S. News and World Report Ranking of the University is related to the star symbology. The second symbol will consist of a graduated scale of moneybags to denote the relative cost of the university with one
moneybag denoting inexpensive school to the most expensive with five money bags. A hyperlink to the actual cost per credit hour from the particular school will be related to the moneybag symbol. As mentioned earlier the "Speak Out" symbol of a paper delivery person yelling will link the student to testimonial type information.

**Figure 4  Supported School Selections**

**Courses**

This branch is intended to allow students to find specific areas of study with immediate information concerning the accreditation of the institution in that particular field of study. The page highlights programs that do not result in a conferred degree to ensure the student understands that the coursework will not result with a degree without further coordination from the registrar of another institution. For example, there are many universities that currently provide some classes (particularly engineering degrees) via distance learning but very few offers a complete program. Rochester Institute of Technology and the New Jersey Institute of Technology both offer accredited programs in engineering but are currently the exception rather than the rule. As was discussed on Schools the quality, cost and Speak Out symbols are also integrated.

I’m confused here – in ... I did not immediately realize that you need to now press the buttons for the curricular area. [I added text to hopefully make the intent clearer] By the way, there is no accreditation for Information Technology .... I’ll try to ask someone who should know. [Prof, I’ve fixed the description on the web site and added an earlier brief discussion on accreditation. The accreditation links are representative and I have taken liberty to add some programs that US News and World Report did not cover. Sorry for the confusion, SJA]

**Services**

The Services branch was created to focus on those things that are not physical items such as an on-line tutor, shopping, or testing. There would be three methods for the E-VC to collect revenues from these service organizations. First, each hyperlink to a specific service would be “tapped” with a counter to realize revenues. Second, advertising on these pages would provide additional revenue. Third and most importantly, the information concerning the preferences and user demographics will be used for resale to service providers and product vendors.
The products sections shows the variety of goods that are consumed by E-VC participants. Each of these provides the opportunity to save the student money and put a small amount towards E-VC support. This example is relatively straightforward and based on offerings from both Amazon.com and Yahoo.com and only about half of the options are populated to provide examples.  

Advising is truly an area not served by any current provider of education services on the internet. The classic idea of a person that can help an individual decide on a course of action based on the available programs, the individuals goals and the personal constraints (i.e. tuition costs, personal level of independent work). This is also an area where the customer service that is provided in the E-VC will keep students coming back to the environment. As with maintaining the quality of the offered schools and services this area can also shut down the return business and effectively doom the E-VC's ability to mature. Initially the advisors will need to not only propose courses that are within the E-VC but those that are outside with the goal of working to bring those programs within the framework. The idea as stated earlier that communities are based on trust and if the advisors do not earn the trust of the students then the students will not used the E-VC to service their goals. Trust is a big issue, Are these advisors in the spirit of an ombudsman? [That is how I would intend it to work,SJA]
Initially the web site will ask for one directional communications via the internet in the form of email with the short term goal of integrating audio chats using tools such as PalTalk, Intel internet videophone and ICQ that will be discussed further later in the paper.

Additionally the web site has a frequently asked question area that would be linked to the advising site to hopefully quickly answer some of the students questions. The intent is to have the text stream look similar to the format of RIT’s colloquy discussions. Similar to the products areas a search function will be attached to allow for quick access across the stream of text questions and answers.  

Coffee Shop

The ability to interact on-line with others is a boon for students particularly since it allows an inexpensive way to exchange thoughts. The coffee shop is the place to create a diversion and a bit of fun to allow for students to maintain their edge. The idea of the coffee shop is two-fold to bring in new students with the attractions and maintain other students as the transition between programs. The coffee shop will have many chats that are across the entertainment spectrum. The offerings at the main area are somewhat tongue in cheek but the reality is that the E-VC needs to bring in high profile personalities and cutting edge, interesting happenings to maintain interest in the area. The gaming area would have multi-player contests similar to those that are flourishing at places such as Media and Games On-Line. Similar diversions would be set up in the other areas all with the theme that the members of the E-VC will get the most competitive pricing and hopefully interesting diversions. These activities in the coffee shop are also intended to further bind the community so that members have a feeling of belonging and common experience which is the goal of building a community.

![Figure 7 Supported Coffee Shop Selections](image)

As was discussed in the advising section an important part of success is making communication more effective and less obvious. A large number of users do not have the typing skills to support the flow of thoughts as well as they could in a telephone or videophone conversation. An inexpensive method of bridging this deficiency is to incorporate a voice-to-text software tool or a direct low fidelity voice capability. The capability is available today and by leveraging numbers of users costs should bring the technology to users with minimal cost.
Need for a Single Framework for Coursework

As discussed in the strategy for the E-VC environment and the need to create a similar if not the same form and function between learning levels. To fill this need for the different learning institutions to conform to a similar method of presenting coursework to the students the E-VC must provide this to participating institutions as both a benefit and a stipulation for participation in the environment. Similar to the Microsoft Office paradigm of providing a familiar work space for users the E-VC will use similar tools for all levels of education, while limiting the overhead (financial and time) for all educators involved, and the E-VC coordinators. This is the main use for a tool such as colloquy where the user learns how to move within the learning environment once rather than several times throughout their learning cycle. Colloquy is a tool that was created to provide a better environment for learning.

To enable this function the E-VC needs to create a rapid prototyping, web-based architecture for the various institutions to use. Specifically, Rochester Institute of Technology's Colloquy software has a stated goal of facilitating interaction and collaboration between students and teachers, which is currently lacking in most distance learning situations.45

Benefit of current version

The current version of Colloquy allows for students to easily access their coursework and has an intuitive feel for most of the navigation tasks. The coursework is readily accessed and the student can easily follow threaded asynchronous discussions with the multi-level organization of the response to topics. I thought that this was the problem with colloquy in that the interface is not obvious. [Prof, I don't think I've said that but I have commented on the need for more media integration for accessing other students,SJA] As an HTML based application Colloquy allows for ease of upgrade for the student requiring less computer knowledge and allowing the student to focus on schoolwork.

Suggested Improvements

Colloquy does not have a direct method for accessing other students and determining who else is available for discussions at the moment the individual is on line. For example to use Microsoft's NetMeeting a user needs to first know if the other user is available. Currently larger ISPs and AOL have methods to instantly determine if other users are available for discussion. This search function is also a part of the RIT FirstClass © solution. The best freeware tool currently available is ICQ, which has its own search capability for those on-line. Multimedia support is also limited in colloquy and the integration of some of the currently available tools would show students particularly those in the Information Technology field of their capabilities. As for adding accessibility inputs two separate voice-to-text software applications were evaluated to see if they would assist current users of colloquy. There are minor individual improvements to Colloquy that will also be discussed.

ICQ

For both colloquy and the E-VC having an application that can determine internet locations of members is one of the first steps in setting up more interactive discussions.
Real time interactive discussions make distance learning less distant and more interesting for the individual. The current Colloquy implementation does not have a real time chat capability that the ICQ application would automatically fill with robust function. According to the “Guru” from ZDNET ICQ has “...tried to build a community of users and their interests,” which coincides with the stated goals of the E-VC and also serves RIT’s Colloquy needs. 46

The application can be used to find other users for point to point communications (chat or voice-with internet telephony software) and setting up lists for conferences within the colloquy environment. The latest version has multi-conference capability and allows for the integration with other programs such as NetMeeting © or CoolSpeak © to locate users. This function can be based on the section list developed by the teacher to create the private listing needed to initiate a voice chat capability (with other software) and ease the search problems normally encountered with NetMeeting©. Additionally, this would be used to create user groups within the coffee shop of the E-VC. 47

I have loaded the software and found it relatively easy to use. It has several layers to allow users to block whether they are available or not empowers the user to decide if they are available and what return message to show to others. This is one of the detractors of the implementation within the FirstClass © software that as a user you have to reject requests for chat or ignore them within the environment. The software has a collaborative internet search application that can be attached to allow users to chat about web sites as they concurrently view the site. The issue with this software and with implementation of the E-VC concerns privacy and value of information. The ICQ software requires information concerning the user; users will need to feel comfortable with providing their information in return for the service. This is a tenet for transitioning to a virtual community. The overhead that would be required would have the student, course designer or professor for a particular course would need to load the information concerning students and have them set up as a group on the ICQ. More importantly the application is not just for use in school it can be used for socializing and interacting. The university doesn't need to worry about the upgrade costs and how to defray them since that is borne by the ICQ community similar to the ideas discussed earlier with the E-VC. This could be tried as a trial run with a class to see how it is received and the benefits it can provide. I know that one of the biggest problems that I have had in the past was setting up NetMeeting for use and any tool that would make that easier would be welcome.

Education/Accessibility Software

An important adjunct to the current state of distance learning that would be added to the Colloquy (and the E-VC) would be more extensive use of audio, video and still photos. The packages that are mentioned below are those that were actually reviewed for this project to determine their benefit to Colloquy and the E-VC.

This multimedia hardware capability to allow for expanded interactivity can currently be supported relatively inexpensively by the hardware contained within packages such as the Intel PC Camera. To create videos for teaching capabilities the Pro Pack which allows the incorporation of movies from video cameras or video cassette players. This is off the shelf capabilities that seriously enhances the information presentation between students, teachers and the E-VC organizers/participating schools when coupled with a minimum 56k capability that is available from most internet service providers. 46

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Intel's package includes software which requires minimal capabilities in the user's computer in that the basic PC with a 166 MHz Intel Pentium, Windows 98, 32 MB RAM, a 16-bit display, 120 MB hard disk space, Windows compatible sound card with speakers and microphone, 4x CD-ROM drive, MS Internet Explorer 4.0 or Netscape Communicator 4.0, and internet access at a rate of 28.8 Kbps or faster via modem. If the student has at least this capability the picture is a bit jerky though a significant improvement over audio only. This was used and was much better when worked with 56k modems (~mid 40k rate, 45.3 k) and a more powerful PC.

Colloquy does not currently directly support various types of multimedia and the incorporation of a capability such as the Intel PCcamera for conferencing. Some of the players of information such as RealPlayer are available for download at the main RIT site but not on Colloquy. The PCcamera would allow students and teachers the capability to create their own movie loops to share with others. This type of capability can also be linked with PalTalk or ICQ as mentioned earlier to allow for low rate video conferencing or at least internet phone conversations between students within a class. 49

This type of information delivery brings the information to the student in a more vivid manner rather than just reading the information. The students can also save off their own AVI (audio video interleaved) files to document study group activities or discussion groups for use by teachers or other students.

Making the use of a collaborative work product such as NetMeeting by Microsoft easier would create an replacement for the current teleconferencing that would require the student to have a second phone line to look at data while conversing with the class. The listing of NetMeeting (already available from RIT distance learning downloads) or another enterprise collaborative application is that like it or not Microsoft will be available for the near future and relying on continued support is a certainty. 50 This follows the current colloquy philosophy of using plug-in technologies should be used to enhance the education experience. Without a tool such as ICQ though NetMeeting will not get a lot of use since connecting will continue to be an issue through the Microsoft server.

As an additional direct upgrade comment on the colloquy reference page where materials are left for students to download should have the application pointer available. Whenever briefings, movie loops or still figures are placed on the site the particular viewer should be paired with the information. This doesn't take up a large amount of space and relieves the student from "finding" the download from the RIT site. This could be an instruction to designers/teachers to select the correct viewer for the particular reference they have attached. This puts the responsibility of knowing the capability on the provider of data not the user.

**Internet Point-to-Point Conferencing**

This feature will allow a better communication with members using current capabilities that have proven integration and continuing support with most importantly no cost other than allowing shared information. This could be enabled either through the previously discussed linkage of ICQ and the Intel package or through the use of ICQ with PalTalk.

**PalTalk**
The PalTalk©, which is a freeware tool for internet phone, connects with a new function of supporting video similar to the Intel software. This software has been recommended in various sites in particular TUCOWS where it received 4 cows. This software has the capability to allow for internet telephony and chat capabilities. This is a capable piece of freeware that could also work work well in both colloquy and in the chat area of the website. As with the other software that has been discussed I have gone through and loaded and used this software with a bit of difficulty. Some of the drivers are non-native and required additional downloads to make the capability work. Though the reviews were positive from the listed sites I personally would not suggest this application for use in the Colloquy environment and would lean towards the use of the Intel hardware linked with ICQ for a trial within Colloquy for student conferencing.

When it's not possible to set up a voice conference, tools to assist those with poor typing skills or disabilities would enhance Colloquy.

Voice-to-text

As mentioned in the chat area discussion a voice-to-text capability would also enhance the experience for most students. There are various products on the market but this is still a nascent technology so though there are capable products available they have not yet reached the level that they would be bundled in operating systems and therefore be inexpensive for student use.

Research into the state of commercial voice-to-text capability was accomplished to limit the scope of the evaluation. It was found that there are currently two leading providers of this capability. The two applications that were looked at were IBM's ViaVoice© and Dragon's Naturally Speaking © software. Both applications have a proven capability for translating voice to text or text to voice. This type of software can facilitate a neat transition to the ubiquitous computing environment where (it is hoped) less and less the students realize the computer between themselves and their communications partner.

To provide general background on the voice to text software applications both require at least Pentium II machines with 32 Meg (Dragon) or 64 Meg (IBM) and a soundboard. Both pieces of software have a requirement for initial training to an individual speaker. The algorithms that are used are based on an individual’s speech patterns and the context of word usage. Each application requires the user to go through an initial training session and then allow the software to look at some of the user’s documents to analyze habits.

The current state of both software applications though makes the interface with Colloquy somewhat clunky though workable and will be further discussed in the application specific discussion. For those with very poor typing skills or disabilities the up-front training of the interface may be well worth the time investment. For persons that can type their thoughts near real time in a chat session the capability may still be more show than substance. Though I must admit that there are more than a few people in the RIT IT program that I have “chatted” with that would seriously benefit from this technology.

ViaVoice

ViaVoice is considered to be the product for the masses and at $79 fits this criteria (I purchased this on sale for $29). I have personally loaded this software and went through
the required training with varied results. Though the software minimum requirements were compatible with the machine I loaded it on more RAM would have probably enhanced the response time and I was often waiting on the software to "catch up". Depending on how slow a typist the individual was this may be a viable solution but I would not recommend trying to run this on a minimum configuration, which is a large detractor for a Colloquy enhancement. It is difficult to say what type of machines our students have. Many have very powerful machines. [Prof, Agreed though at some point delivery to a wide audience needs to focus on the majority and lean towards the least capable hardware, SJA]

To the plus side, the program allows users to work in text windows and more importantly in browser software. This is an important upgrade in that it allows the user to input data directly into Colloquy windows. This works but the minimum training that I had accomplished with two additional sessions still left me working corrections as much as inputting data. ViaVoice also has an incorporated voice actuated mouse that could bring further flexibility to handicapped persons but are not really helpful to able-bodied persons. 53, 54

**Dragon Naturally Speaking**

Dragon’s Naturally Speaking is considered the industry leader that all other products are measured to and the company has a product that has a multi-user licensing capability. 53 I have personally used and have found it to have the capability for decent voice to text capability after only the minimum training and can see that further training would make it a viable tool. To illustrate some of the problems and benefits I have an excerpt from a session directly from the application. The errors in the transcription are annotated following the error with the correct wording enclosed in brackets “[ ]”.

**Actual DRAGON NATURALLY SPEAKING excerpt AMD K6/32Meg RAM**

Even so far as going ahead **in** [and] formatting text **pre**-[pretty] straightforward **in** [and] relatively easy to accomplish **what** [with] relatively little training.

This paragraph will **shelving** [show] what using Dragon NaturallySpeaking will do for someone who has poor typing skills and would rather speak into a microphone with **then intend** [the intention] to typing a real-time cat [chat] session

The previous paragraph showed that Dragon has some problems with certain words such as " show" and “should".

This work was done with using a minimum training set from the Dragon selection.

The example shows that some words are more difficult but when compared to the IBM software this was a significant improvement and with some additional training would act more as a tool and less as a stunt. In real time chats also everyone is more forgiving similar to face-to-face conversations with errors and this was nearly real time so that even with editing could have been a real benefit. The one detractor for Dragon is that you
have to input data in one window and cut and paste into another, a relatively minor inconvenience for the benefit.

To further this theory I conducted an interview with a long time user of the software, Mr. Paul Franklin, who by his own admission is "a rotten typist". He uses the application to input memos and answer email and continually updates the learning set to enhance the capability and he believes it is much greater than 90% capable in voice to text which saves him immeasurable time and grief. He has been using the software continuously for a year and believes in the product.\(^{56}\)

The software is a bit more expensive than IBM (I received mine free from the Dragon representative) with the list price of around $99 for version 4.0. The down side of the software I tested version 2.0 it that it does not allow you to work the mouse or browser like the IBM software does very easily.

I would suggest trial of students using the Dragon software if it was possible to obtain a group rate or the multi-user license that could rotate through classes to allow the student to experience this capability.

A final minor suggestion for the Colloquy software is to change the current procedures for updating files. Unless there is no backup it appears that the server takes a while to release a file for update. Even following the procedure I had problems whereas just deleting the file that will be uploaded appeared to be a much quicker and cleaner operation.\(^{57}\)

**Summary of findings**

**Need for E-VC**

From the research that has been accomplished the need is real for an E-VC but the question is whether individual institutions will be willing to sacrifice their independence and join such an organization. The recent emergence of the NTU shows that some institutions are moving in this direction but are staying away from expanding the role beyond delivering coursework and limited advising. As stated earlier AOL has already begun hosting the University of California Berkeley curriculum and probably a few others that the author has not observed through research. As a person who has completed both a Bachelors and soon (hopefully) a Masters fully by distance learning the E-VC would have assisted my endeavor immensely particularly in the beginning when I was trying to find a Bachelors program.

**Benefit of gravitating personnel**

Most of the benefits for the individual can only come about when there are significant number of students involved a size such as the Western Governors' University system size of several thousand students. The National Technical University is attempting to create a single avenue for gravitating students but does not attempt to cover the other side of the student's experience living and socializing in the virtual environment. The site creates a greater ease of solving the education search but does not assist the student in solving the greater problem of getting through the course and feeling comfortable in the process.\(^{58}\) The E-VC would remedy the NTU-like feel of work and add some excitement and thus make the experience enjoyable and should generate
more members. The server host will only begin to reduce costs on products when the numbers are credible to vendors. Until that point the server host would need to bear the costs and the unknown is how long would the build up of membership take?

**Viability of idea for proposal to Large Internet Service Provider**

A larger ISP or an AOL can support this idea but based on current business practices it is doubtful that organizers such as AOL will believe that turning money back to the members is the way to make money and will probably stall the development. Additionally, the AOL environment is somewhat in the realm of possibility to propose this to but it is somewhat too restrictive in what is allowed for access. The one hope is that the organizer that would take on this idea would show that the transfer of control of individual information value would become a watershed event on the internet. That this information could provide the leverage to open competition and maintain membership at levels that advertising, micropayments and spin off services maintain the organizer's profitability. The final question I found (but did not answer) was would a business trust that the E-VC organizer was operating as a non-profit and want to take over control of the environment at some point to gain further revenues?

**Colloquy**

This environment has many of the features needed to deliver distance education. As such it fills the niche of providing a common environment for students to learn once and use throughout their learning experience. I think that there needs to be some additional features enabled within Colloquy such as more interactive communications particularly since the focus of the school is telecommunications. The most interesting courses I have taken with RIT have been those where there was a significant amount of chat sessions for students to share insight. Students need to have further experience with using this emerging capability and understanding how it benefits users. To this end I propose that the school look at trials of ICQ, Intel's video capability and Dragon Naturally Speaking within the Colloquy environment. The trials could be used as the basis of other graduate students work in investigating the usefulness of the proposed applications. Is this your final conclusion? [Prof, this is it for the colloquy section. Stan]

**Benefit to the Author**

The investigation of the E-VC idea has broadened my understanding of the development of internet based distance learning and the real need for better support for students. Additionally the web site was created to understand the basic steps required in developing a web site and serving the E-VC objectives. My previous work in the telecommunications hardware/software concentration allowed for very basic insight (single page design) though no site design was required. This project allowed for further broadening of my knowledge of the design and activation of a web site. I feel relatively comfortable in creating a simple web site with some active functions available, which I could not say before hand.

If I understand this last paragraph, your web site is meant to be a prototype so test the inclusion of the features of an E-VC? Do you plan to include any additional features into your prototype such as the three products mentioned above?[Prof, The other functions have been checked out and would need to be downloaded to a users system. The mentioned software would need to have an area within the particular school's colloquy
area to download (or a pointer) the applications to the user's computer or a provided CD.
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Appendix A

Full Text of Dragon Example

To begin with a trying to see how well the fork him in the well I guess probably not really great at this point outright go-ahead and uses directly into an Internet application so far so good it seems that as a go along the seems to pick up on some of my patterns and then after that a does better job that the following my speech patterns wanted to serve impressive is now it's actually keeping up to speak in a relatively normal fashion at this point I believe that this would be useful for folks in telecommunications apartment. It is pretty neat that after a 30 minute training session the system is relatively capable at translating my voice to text.

Even so far as going ahead in formatting text pre-straightforward in relatively easy to accomplish what relatively little training.

This paragraph will shelving what using Dragon NaturallySpeaking will do for someone who has poor typing skills and would rather speak into a microphone with then intend to typing a real-time cat session.

The previous paragraph showed that Dragon has some problems with certain words such as "show" and "should".

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