

Evaluation Report for the Illinois Virtual High School

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Introduction

This document presents an evaluation report for the course development process used by the Illinois Virtual High School (IVHS). This report includes a description of the background, purposes, audiences, decisions, questions, methods, sample, instrumentation, limitations, analysis of the results, and recommendations. This report is based on the evaluation plan agreed to by the Illinois Virtual High School and the evaluator (Michael Barbour).

Background

The IVHS is a state-sponsored virtual high school designed to provide web-based learning opportunities to students and teachers. The mission of the Illinois Virtual High School is “to use new and emerging technologies that expand the boundaries of space and time to provide Illinois students and their teachers with increased equity and access to the highest quality educational opportunities.”

IVHS Course Costs (Updated 8/4/04)	
One Semester Course - \$175	Summer Term - \$120

New Schools: Try IVHS for Free!

IVHS continues to offer one free registration per term for an entire year for schools new to IVHS. A new school receives the opportunity for one free course registration for three consecutive terms (summer term included) beginning with the term of their first enrollment. Schools that enrolled their first student in Spring 2004 received a free enrollment in Spring and Summer of 2004 and will also receive a free enrollment for the Fall of 2004. Schools that enrolled their first student in Summer 2004 will receive a free enrollment for Fall of 2004 and Spring of 2005. Schools that enroll their first student in Fall 2004 will receive a free enrollment in Fall of 2004, Spring of 2005, and Summer of 2005. If a school chooses not to enroll any students during a term where they are eligible to receive a free enrollment, they forfeit that free enrollment. Additional students from new schools are welcome and encouraged, but will be charged the regular course fee.

IVHS Scholarship Opportunities

Schools with at least 25% of their total student population qualifying for Free or Reduced Lunch receive ?

The primary goals of the IVHS, as stated in the *IVHS Preliminary Strategic Plan*, are:

1. assure equitable access to rich and varied learning opportunities for Illinois students, with emphasis on curricular areas needed to ensure that all students can meet the Illinois Learning Standards and succeed in higher education and the workplace;

2. expand high-quality professional development opportunities for Illinois teachers and other educators; and
3. support schools in integrating technology into teaching and learning.

The IVHS is not a school in the traditional sense, rather its purpose is to enhance and supplement the educational offerings of local schools. As a result, the IVHS does not offer a high school diploma. Students must register in and receive credit for IVHS courses through the school they attend. These schools are responsible for determining the students' ability to enroll and their final course grade. The eCollege course management system, along with the synchronous communication tool Elluminate Live (produced by Elluminate, Inc.), are utilized to deliver the IVHS' web-based courses.

When the IVHS was first established, it relied heavily on packaged courses from external vendors to quickly populate their course offerings.

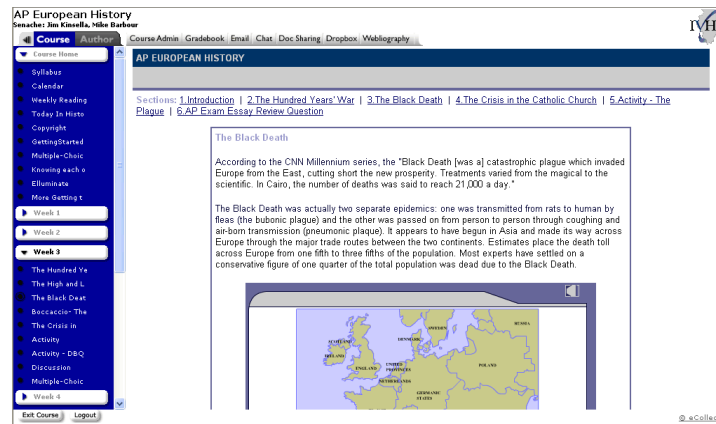
Over the past five years, the IVHS has continued to rely on external vendors but has also developed courses, using teachers as subject matter experts and course authors, and external design and production staff (eCollege) to support their efforts.

IVHS contracted teachers who had gone through a hiring/qualification process that included an Instructional Design Tutorial, developed and taught by eCollege. The combination of that corollary training and the on-going support of a design/production team were intended to guide their efforts during the course development process.

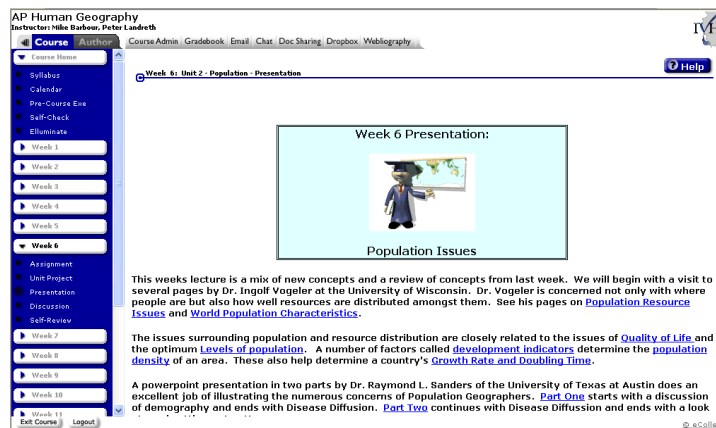


Unfortunately, there was great variability between each of IVHS' offerings. The productized nature of vendor-based courses led to uniform navigation, interface, and instruction but only within a single vendor's offerings; IVHS' multiple vendors deployed different models.

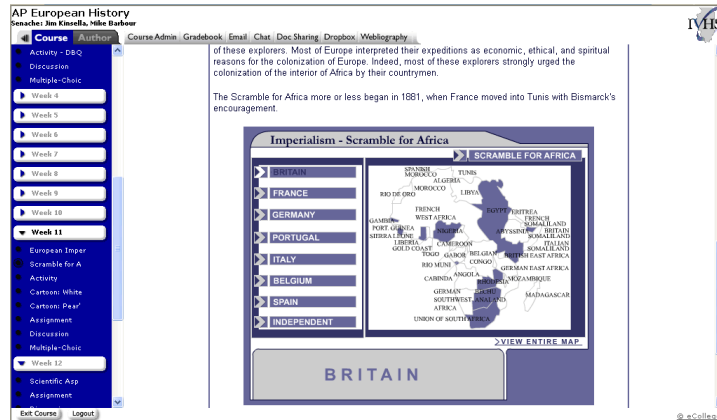
Also, despite the shared experience of the design tutorial and the support of a core team, IVHS course authors' development was executed with more of a course-by-course approach, introducing even greater variability.



Since all of the IVHS courses were developed for delivery through the eCollege platform, the format of that tool helped mitigate some of the overarching design variability as it provided a fairly uniform course architecture and a fixed approach to navigation, but not to the degree that IVHS had intended or would like.



One area of note is the dramatic variability in the use of web-based components from course to course beyond what one might anticipate in comparing offerings from a range of topic areas. Some courses contain both internal and externally linked multimedia, video and audio components; others only contain text, external links and sparse use of images.



Over time, IVHS has worked to alter the course development process and deliverables and provide greater design support to course authors. IVHS has developed a curriculum development tool, Syllabuild. It is designed to provide some basic instructional design guidance to course developers by giving them templates to structure their curriculum development on level of course, unit, and content item. It also integrates state guidelines (e.g., goals, standards, and performance descriptors), so course developers can use them to assist in their efforts and align their courses with those guidelines proactively as part of the actual development process. Finally, early stage course development will be structured in a database format and can be delivered to eCollege both for reporting and documentation. And as courses move toward production, data files can be exported and imported to streamline the course building process.

As the IVHS begins to develop more of its courses internally, particularly using this new tool, and its total number of course offerings continue to grow, consistency within and between courses will become more important.

Purposes

The purpose of this evaluation was primarily formative, i.e., to provide the client with the reliable information needed to improve the course development process utilized by the IVHS.

The sub-purposes of this evaluation were:

- to collect information for comparing the IVHS course development process to that of other virtual high schools;
- to collect information for improving the IVHS course development process; and
- to collect information for determining how the IVHS course development has contributed to the stated goals and objectives of the IVHS.

Audiences

The primary audience for this evaluation was the Illinois Virtual High School, specifically Brad Katz (Coordinator of IVHS Course Development) and Matthew Wicks (Director of Virtual Learning, Illinois Mathematics and Science Academy) of the IVHS.

The other significant audiences included:

- course developers for the Illinois Virtual High School;
- individuals who are responsible for course development at other virtual high schools;
- other virtual high school providers;
- researchers and students of interest; and
- other higher education institutions interested in virtual high school course development.

This evaluation was designed and implemented by Michael Barbour under the guidance of Dr. Tom Reeves from the Department of Educational Psychology and Instructional Technology at the University of Georgia. Although this evaluation also met some of the requirements of a graduate course (EDIT 8350 – Instructional Product Evaluation), it was planned, conducted, and reported as a real evaluation for a real client.

Decisions

The results of this evaluation were anticipated to have an impact on one primary decision:

How should the course development process for the IVHS be improved?

Publication of the general findings of this evaluation may also have an impact on decisions made at other virtual high schools in North America.

Questions

The following questions were addressed to provide information to support the decision that must be made:

1. How does the IVHS course development process compare to other virtual high school programs?
2. How does the IVHS course development process contribute to the stated goals and objectives of the IVHS?
3. How has the IVHS course development process been improved over time?
4. What specific improvements to the IVHS course development process are recommended?

Methods and Sample

There were several methods used to collect data to address the questions identified above. Due to the limited time and personnel that was available, the samples of some of the methods were limited to smaller numbers than the desired sample size. The initial list of methods to collect information includes:

- Document Analysis

There were initially two levels of document analysis planned. The first was a review of the course development process at other virtual high school. After contact was made with several other virtual high schools, the evaluator was only able to obtain a good sense of the course development process at one other virtual high school: the Centre for Distance Learning and Innovation (CDLI) in Newfoundland and Labrador, Canada.

There was also a planned review of two courses that were created during the first year (2000-01), one course that was created during the second year (2001-02), one course created during the third year (2002-03), and two courses that were created during the fourth year (2003-04). These courses were to have been selected by the IVHS. Unfortunately, the IVHS never provided the evaluator with the necessary list of courses, so the evaluator was left with access to only two courses to review, both of which were created during the IVHS' first year of operation.

The second level of document analysis was a review of the IVHS instructional design tool, Syllabuild. At the time of the review, there was only a demo version of this tool available and the review was conducted on that demo application.

- Surveys

The evaluator created a two part web-based survey of likert scale and open-ended questions. An e-mail was sent to all former and current IVHS course developers (thirty-three in total excluding the evaluator) requesting them to participate in the survey. Unfortunately, four the e-mail addresses provided of those individuals were not longer active, which provided a pool of twenty-nine developers.

Of those twenty-nine developers, eighteen agreed to complete the survey, seventeen of which actually completed part one and fifteen of which completed part two. This meant that there was a 59% response rate for part one and a 52% response rate for part two.

- Interviews

The evaluator also conducted semi-structured interviews by telephone with four IVHS course developers. These individuals included two developers from the IVHS' first year of

operation (i.e., 2001-02) and two developers from the second year of operation (i.e., 2002-03).

Evaluation Matrix

Evaluation Questions	Document Analysis	Surveys	Interviews
1. How does the IVHS course development process compare to other virtual high school programs	X		X
2. How does the IVHS course development process contribute to the stated goals and objectives of the IVHS?	X		X
3. How has the IVHS course development process been improved over time?	X	X	X
4. What specific improvements to the IVHS course development process are recommended?		X	X

Instrumentation

There were two primary instruments that were utilized for the purpose of this evaluation: a survey for those who are or have been involved in the course development process with the IVHS (see Appendix A) and an interview protocol for those who are or have been involved in the course development process with the IVHS (see Appendix B).

The survey contained in Appendix A was designed to address questions 2, 3 and 4. This survey was distributed to all former and current IVHS course developers on Monday, 15 November 2004 (and re-distributed numerous (i.e., eight to twelve times) thereafter). The surveys were distributed through a web-based survey tool (i.e., Survey Monkey – <http://www.surveymonkey.com>).

The interview protocol contained in Appendix B was also designed to address questions 2, 3 and 4. These interviews were conducted from 26 January to 02 February 2005.

Limitations

There were many constraints on this evaluation that potentially affect the interpretation and generalizability of the results. The length of time that has passed since the first stage of course development for the IVHS was considerable, which meant that some of the former course developers were unreachable by the evaluator or reluctant to contribute, and those who did contribute may have also skewed the information due to the time that has passed since their course development experience. In addition, given the fact that all of the contact with former and current IVHS course developers was done through electronic means, it was easy for those individuals to simply ignore requests for participation (as evidenced by the only 50%-60% participation rates).

Overall, course developers are pleased with their experience in developing courses for the Illinois Virtual High School.

Issues

The Illinois Virtual High School has had fourteen of their thirty-three developers design more than one course. A majority of those developers who were surveyed would develop yet another course if asked and would also recommend course development to a friend or colleague. This is indicative of the fact that the developers are generally pleased with their course development experience.

Evidence

From the web-based survey:

- *Would you develop another course for the IVHS? (82%)*
- *Would you recommend to other teachers that they develop a course for the IVHS? (76%)*

From the comments portion of the web-based survey:

“It was a great experience, one that I would like to repeat some time.”

“I would like to participate in the creation of another course in the technical field. I enjoyed.”

“It was intense, but an experience I would recommend to anyone interested in teaching in the online world.”

“The timeline was short and strenuous, but I really enjoyed being a part of the process. I have done it twice, and I would definitely do it again!”

“It was fun and challenging...”

The Illinois Virtual High School course development process is fairly open-ended with a lot of room for developers to create the kind of course that they want to create.

Issues

Compared to the course development process of the Center for Distance Learning and Innovation, the Illinois Virtual High School is very open-ended. Developers with the IVHS are given pretty much a carte blanche for the structure and style of their courses, whereas developers with the CDLI are expected to work within a structured template. This reality has resulted in many different “looks” and

“feels” to the IVHS courses, to the point where there is so little consistency between courses that it is entirely possible for a student to feel like they are actually taking courses from two separate entities (as compared to the CDLI, where students in one course could easily navigate any other CDLI course due to the similarity in style and structure). In addition, the IVHS appear to provide their developers with guidance from both the IVHS and eCollege on an ad hoc or as needed basis and payment is made upon completion of the course, whereas the contracts for development utilized by the CDLI spell out specific deliverables by specific dates for a specific portion of the overall payment (which is actually two to three times the amount offered by the IVHS).

Also, the vast majority, if not all of the course developers for the IVHS are former or practicing teachers with little experience in the design and development of structured learning activities outside of their own classroom. While this has been a positive aspect of the course development process, as these individuals bring a wealth of classroom experience into the development of their virtual courses, it is also provide many challenges for these developers. Many of the developers expressed concern about the lack of guidance provided by both the IVHS and eCollege in terms of how to go about creating their courses to what to include in their courses to formatting issues. However, many of the developers also commented on the helpfulness of the people at the IVHS and eCollege in their course development process.

Evidence

In the likert response items from the web-based survey, six of the fifteen comments specifically referenced the IVHS and five of these six items were ranked as the five lowest mean scores of the fifteen items. For example, these four items were the only ones to have a mean score of less than 4 (on a scale of 1-5)

- *An initial meeting was conducted to determine the scope and nature of your course. This meeting was helpful to you in understanding the nature of the development process. (3.75)*
- *Tasks were identified and responsibilities were assigned in accordance with an acceptable timeline and this information was communicated to you. (3.81)*
- *The IVHS staff was enthusiastic and enjoyable to work with. (3.94)*
- *The IVHS staff seemed well prepared for meetings with you, and thus these meetings were efficient and productive. (3.87)*

While all of these items are still above average on the 1-5 scale, the trend of responses specifically mentioning IVHS scoring low should be of concern.

Example comments of developers in discussing their mixed relationships with the staff at both the IVHS and eCollege:

“There was no support from eCollege, as I had thought there would be... What little help I received from eCollege, I often had to re-do because there were so many mistakes.”

“... slightly disappointed not by working with IVHS, but working with the tech team from Denver...”

“... I could already expect that the tech team was going to contact me at the last minute...”

“when I had lots of time, eCollege wasn't ready for... Then when I got really busy at school, it was also crunch time for eCollege... Ed at eCollege was a great help.”

“... I would like to note that Brad Katz who was in charge of Development was extremely helpful. He met with my partner and I often on weekends and even would sacrifice his Friday, Saturday and Sunday nights to help me out with either tech problems or development issues. But as other IVHS staff goes I did not feel supported at all. It was impossible to hold a meeting and feel like I was listened to or that we accomplished anything. I felt like I was told what I wanted to hear then dismissed.”

There were also numerous comments from both the web-based surveys and the interviews related to the amount of work involved in creating these virtual courses, compared to the compensation offered by the IVHS:

“For about \$5,000 I gave up most of an entire winter to put together a course with the quality I felt it should have... I figure I earned about \$5.00 an hour”

“The timeline was short and strenuous...”

“But what could I do without proper technical skills and caught in such tight time frame?”

“... but doesn't pay enough for the hours of work needed to do a good job.”

“The one problem was the timeline.”

“... is the payment process, I think it should be broken up a little bit in sort of a monthly figure, its sort of an incentive I think instead of to say okay, you've got to develop the entire thing and then we give you something... its sort of having a product and when the product is totally finished and here, I'm going to give you the money for it, I can understand this, but this takes time and there are months involved and you know, you just have to realize that if they broke it down and say you get some much per month...”

Approximately half of the Illinois Virtual High School courses were developed by a team of two or more developers and this has worked well in some instances and not so well in others.

Issues

From 2001-02 to 2003-04, the Illinois Virtual High School has fifteen of their thirty-seven courses developed by a team of developers. In instances where the two or more developers got along, the partnership appeared to work well and even some of the individual developers commented on the usefulness of having more than one developer.

However, there were instances where a team of developers simply did not get along or they had differences of opinion in terms of what the course should include. In these instances, the two parts of the final course were very different in their style and substance, and even in the nature of the content of the course. In addition, these teams did not benefit from the act of two professionals coming together to develop a shared product.

Evidence

There were comments from both the web-based surveys and the interviews that illustrated the power of collaborative team development:

“My support group was excellent...”

“It is very helpful to have a coworker look over the logic, the content of ones created segments.”

“I did work with a partner, especially at the beginning because I thought that was very important, and we divided up the responsibilities which helped an awful lot and of course we were able to review each other’s information and so on, and that was very, very helpful, and I won’t say necessary, but certainly someone has to be there to be that second head to say oh this sounds fine or no...”

“... we could talk back and forth and find solutions to particular problems that arose that would be relevant to the student and still maintain alignment with the curriculum.”

However, there were also comments from the interviews of instances where the members of the team actually hindered the process or worked largely in isolation:

“we had a trio to start with as far as three people in this process and somehow we didn’t agree on what was to be done and how, and so on, and that sort of took away our time frame...”

“Well we had a, partnerships or I had people who I cooperated with on those projects that basically I did the first semester and the other person did the second semester, and we kind of proof read each others work and edited but for the most part I developed one semester, they developed one semester then we just said that we developed the year long course.”

The course developers for the Illinois Virtual High School were trained as teachers and unable to utilize the technology of the web to its fullest capacity.

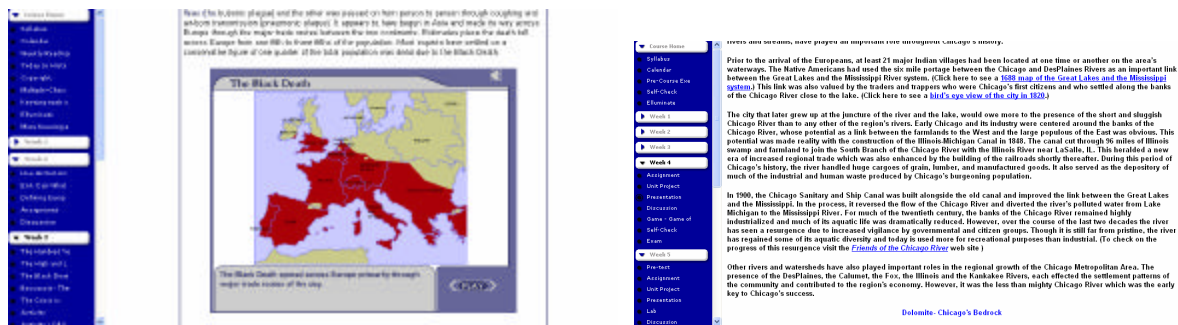
Issues

It was stated earlier that the vast majority, if not all of the course developers for the Illinois Virtual High School are former or practicing teachers with little experience in the design and development of structured learning activities outside of their own classroom. Many of these individuals also possessed few of the technical skills that could be used to really enhance their courses by taking full advantage of the medium of the World Wide Web.

In other course development processes, such as the one utilized by the Center for Distance Learning and Innovation, technical experts were hired in addition to subject matter experts to develop the courses. In the CDLI course development system, a course developer who had shown themselves as capable with the technology could be offered a full contract, while others who were only able to handle the content were offered two thirds of a contract with the remaining third going to someone to specifically design the multimedia content of the course.

Evidence

In the review of the two Illinois Virtual High School courses, one made great use of Flash animations, Java-based multiple-choice questions, even links to audio and video clips to enhance the course. The other IVHS course that was reviewed was largely text and image based, with some links to outside content. It should be of little surprise that the first course had its content designed by two subject matter experts (i.e., teachers) and the media designed by a separate technical team, whereas the second course was designed strictly by a team of teachers.



In the web-based survey, fourteen of the seventeen respondents indicated that they would have liked some training on the use of particular pieces of software, specifically:

- Dreamweaver/Frontpage - 64.3%
- Fireworks/Photoshop - 50%

- Flash - 71.4%
- Java - 57.1%
- Audio Programs - 42.9%
- Video Programs - 57.1%

Further, in their comments in the web-based survey, developers indicated:

“... what to hide, what to make mouse over, where to put a link...”

“this could be audio as well, which makes it more user friendly.”

“... recognize the fonts of the language I teach as FONTS and not as images”

“... provide automatic feedback to students on the course tasks that would be different from just the feedback one gets from multiple choice type tasks.”

“... allow the course designer to put at least audio files on line on her own would be welcome.”

As the Illinois Virtual High School begins to use the Syllabuild Tool to standardize their course development process, the freedom to design the look and feel of their courses was one of the things that the course developers enjoyed.

Issues

Using the demo of the Syllabuild tool, it appears that its intent is to provide a standardized design for course developers for future development projects. Throughout the evaluation, course developers indicated that they enjoyed the freedom that they had in designing their courses and this needs to be considered with the adoption of any tool that may limit that freedom.

Evidence

In the web-based survey, course developers reported:

- *Did you enjoy the freedom to design the look and feel of your course? (82%)*
- *Would you have preferred that the IVHS provide a course template into which you could have written your content? (No – 70.6%)*

Even those respondents who replied “yes” to the second prompt, their descriptions of the type of template were largely technology issues and not template issues:

“The directions to the team (what to hide, what to make mouse over, where to put a link) the basic outline the vocab sections and how to arrange them. an answer key to the tests, assignments when not graded by the system, especially fill ins that the teacher of the course can use for quick grading. Perhaps a set of expectations to check off so that the student knows what is expected for each assignment. For example: write in complete sentences. This could be audio as well, which makes it more user friendly.”

“First of all I would like to have had a template that would recognize the fonts of the language I teach as FONTS and not as images, a template that would enable the course designer to provide automatic feedback to students on the course tasks that would be different from just the feedback one gets from multiple choice type tasks. A template that would allow the course designer to put at least audio files on line on her own would be welcome.”

“It could have been very open but it would have been helpful to have an open shell of chapters. Something so that the students would have an exact outline to how much to finish in a semester.”

Recommendations

Overall, the course developers reported to having a relatively positive experience in designing their courses for the Illinois Virtual High School, however, there were also a number of suggestions for improvement in the system. There are five main recommendations that came from the data generated as a part of this evaluation.

1. Create a structure for the course development process so that the IVHS, eCollege, and the developer are under the same impressions when it comes to the nature of the assistance that can be provided and the expectations of all parties within the specific deadlines of the course development process.
2. Divide the course development process into timed segments that describe the nature of the deliverable due at the end of each period, with partial payment for the successful delivery of each of the segments.
3. If the IVHS continues to use a team of developers for a single course, determine a method of select team members that will work well together.
4. Provide training in multimedia software for course developers or split the course development process so that technical developers can add multimedia components to courses after the content has been developed.
5. Any tool used to guide the development of course developers needs to be open enough to allow for the creativity of the developer.

Appendix A

Illinois Virtual High School (IVHS) Course Developers Survey

Part A – Circle your level of agreement with each of the following 15 statements using the following scale.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Undecided</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Not Applicable</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>N/A</i>

Circle the appropriate response.

1. An initial meeting was conducted to determine the scope and nature of your course. This meeting was helpful to you in understanding the nature of the development process.

1	2	3	4	5	N/A
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2. Tasks were identified and responsibilities were assigned in accordance with an acceptable timeline and this information was communicated to you.

1	2	3	4	5	N/A
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3. The quality of the work you completed was acceptable to the IVHS.

1	2	3	4	5	N/A
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4. The IVHS was accommodating with regards to the work that you completed.

1	2	3	4	5	N/A
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5. The design of your course utilized appropriate instructional materials and methods.

1	2	3	4	5	N/A
---	---	---	---	---	-----

6. The completed course fulfills the curricular goals and objectives.

1	2	3	4	5	N/A
---	---	---	---	---	-----

7. The course engages your students in activities related to your learning objectives.

1	2	3	4	5	N/A
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8. Assessments and assignments were developed to elicit student performance to determine if learning is taking place.

1 2 3 4 5 N/A

9. The course incorporates relevant examples and situations that promote transfer of learning from this context to that of one more personally meaningful to the learner.

1 2 3 4 5 N/A

10. The IVHS staff was enthusiastic and enjoyable to work with.

1 2 3 4 5 N/A

11. Your contributions to the course fulfilled expectations that were initially determined.

1 2 3 4 5 N/A

12. The IVHS staff seemed well prepared for meetings with you, and thus these meetings were efficient and productive.

1 2 3 4 5 N/A

13. IVHS staff members were responsive to any questions that you had, calls, and/or e-mails.

1 2 3 4 5 N/A

14. IVHS staff members were accommodating to your schedule.

1 2 3 4 5 N/A

15. Graphics, animations, and other media used were visually appealing and they reinforced course content.

1 2 3 4 5 N/A

Part B - The second set of question is a combination of yes/no questions and other selected scale questions. Circle the appropriate response.

16. Would you develop another course for the IVHS?

Yes

No

17. Would you recommend to other teachers that they develop a course for the IVHS?

Yes No

18. Did you feel that you had the required technical ability to develop your course?

Yes No

19. What components did you include in your course? (*check all that apply*)

Images	_____	Tables	_____
Charts	_____	Java Applets	_____
Flash Applets	_____	Audio Files	_____
Video Files	_____	Other Multimedia	_____

20. (a) Would you have liked to have received some training on how to use particular pieces of software?

Yes No

20. (b) If yes, which software? (*check all that apply*)

Dreamweaver/Frontpage	_____	Fireworks/Photoshop	_____
Flash	_____	Java	_____
Audio Programs	_____	Video Programs	_____
Other (please name):	_____		

21. Did you enjoy the freedom to design the look and feel of your course?

Yes No

22. (a) Would you have preferred that the IVHS provided a course template into which you could have written your content?

Yes No

22. (b) If yes, describe how that course template could have been structured.

Part C - The final set of questions is open-ended.

23. Describe your decision making process when deciding which content to use and which content to exclude.

24. Describe the process you undertook to align your course to the state standards?

25. Describe your decision making process when deciding what media to include in your course.

26. Describe your decision making process when deciding what kinds of assessments to include in your course.

27. Describe the process you undertook to obtain permissions for copyrighted material?

28. Are there any other comments that you wish to make about the IVHS course development process?

Appendix B

Interview for IVHS Course Developers

Demographic Questions

1. How long have you been teaching?
2. What subjects have you taught?
3. Describe your educational background.

Curriculum Development Experience

4. Have you had any experience in curriculum development? If so, describe those experiences.
5. Have you had any experience in writing textbooks or course manuals? If so, describe those experiences?
6. What course(s) have you developed or are developing for the IVHS? Have you taught that course/those courses?

Probes:

If so, how often?

For how long?

In what format?

Course Development Experience

7. What do you think of the process that you experienced while developing your course for the IVHS?

Probes:

What aspects did you find particularly positive? Why?

What aspects did you find particularly negative? Why?

Did you like the open format in terms of course formatting? Or would you have preferred a standard template to work from? Why?

If you would have preferred a standard template, what would it have looked like? Why?

8. In your development experience, how did you design your courses? Why?

Probes:

What elements did you try to include? Why?

How did you try to structure your lessons? Why?

9. Describe a web-based lesson that you feel would be effective with students?

Probes:

Why was it effective?

What type of multimedia components did it contain?

What were the students' reactions to the lesson?

10. Describe a web-based lesson that you feel to be ineffective with students?

Probes:

Why was it ineffective?

What type of multimedia components did it contain?

What were the students' reactions to the lesson?

11. If you were to include one item in most or all of your web-based lessons, what would it be? Why?