

**INDEPENDENT RESEARCHER CONSTRUCTIVIST DESIGN MODEL**

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## ABSTRACT

This paper describes the use of a new model, the *Independent Researcher Constructivist Design Model*, to teach foreign language listening comprehension of Haitian Creole to elementary school students in Brooklyn, New York. Using the model, the students engage in a multimedia experience provided to them in the form of a *digital virtual textbook* provided by the school. The design principles used to guide the implementation of this new model are discussed as are the methods of assessment suggested to measure the performances of each student as well as the effectiveness of the model.

## INTRODUCTION

Learning a new language involves developing multiple new skills such as learning to mentally translate that new language's foreign vocabulary into your personal native language in order to make sense of it, learning to speak in that language, and also learning to write in that language. We will focus strictly on teaching the translation of the words from Haitian Creole to English. This lesson will not include teaching the students to write or speak in the Haitian Creole language. The main objective of this lesson plan is to provide the students with a meaningful and fun introduction to the language that will help provide them with a simple knowledge base from which they will be better prepared to move on to future lessons where they will learn how to write and speak in Haitian Creole. This lesson plan will not only provide the students with an introduction to the language, it will also help to develop skills needed when searching for answers to problems.

Haitian Creole (written *kreyòl ayisyen* in Haitian Creole) and French are the official languages of Haiti. Wikipedia (2006) states that Haitian Creole is based off of the French language and is spoken by approximately 8.5 million people in Haiti. According to Wikipedia

(2006), close to 3.5 million people living in Canada, the United States, and France, as well as many other islands in the Caribbean also speak Haitian Creole. (Haitian Creole language, para. 1).

However, French is not the only outside language that has influenced Haitian Creole. Wikipedia (2006) informs us that there "... are linguistic influences from several West African languages, namely from Wolof, and some Gbe languages, notably Fon and Ewe/Anlo-Ewe. There are two dialects: *Fablas* and *Plateau*." (Haitian Creole language, para. 2). Wikipedia (2006) also states that some Haitian Creole words were also derived from local indigenous languages, English, and Spanish (French-based creole languages, para. 1).

Prior to 1961, although Haitian Creole was widely spoken in Haiti, it was not recognized as one of the official languages. Haitian writer, Felix Morisseau-Leroy, worked hard to influence the decision to have Haitian Creole become recognized as an official language. He was one of the first and most widely recognized writers of books in Haitian Creole and as a result, the amount of books written in Haitian Creole today is growing. (Wikipedia, Haitian Creole language, para. 3).

The target student population for this lesson plan is Brooklyn elementary school students enrolled in an Introduction to Haitian Creole foreign language class. This school provides each student with *digital virtual textbooks* (on CD-Rom) for each class that they can run on their laptop computers. Each digital virtual textbook is divided into chapters similar to how traditional textbooks are structured. However, instead of presenting only text heavy instructions on each subject as would be found in most textbooks, each chapter also includes usage of various forms of multimedia such as interactive games, videos, animations, and audio. Each chapter in the Haitian Creole virtual textbook addresses a specific set of vocabulary words based on the theme

of that chapter. Examples of themes covered in each chapter of the Haitian Creole class include *Introducing Yourself*, *Telling Time*, *Directions*, and *Foods*. The theme we will cover in this lesson is *Directions*. The instruction for this lesson will involve learning to comprehend directions given in Haitian Creole.

### CONSTRUCTIVIST DESIGN MODEL

#### Guidelines

Black and McClintock (1995) propose that "... what students are doing when they construct knowledge is studying. Specifically ... study captures better what they should be doing during knowledge construction than does the term learn." I believe that studying implies more work on the part of the student. Studying allows the student to take more of an active role in his/her own learning. I believe students should be taught to develop a philosophy where they can feel comfortable taking on a role as a researcher of further knowledge when they have questions instead of solely relying on their parents or teachers for the answers.

Many times, young students do not go any further than their parents or teachers when they are curious about a topic. This may be due to not having enough available resources to perform their own research at the time. This may also be the result of never having been in a type of setting that would promote performing individual research in the past and as a result, not having had the opportunity to practice performing these types of activities in order to develop the necessary skills needed to perform successful research. In order to successfully develop these skills and acquire a new mindset that would successfully take advantage of these skills, students need to actively participate in exercises where they are encouraged to actively seek out answers on their own. They need to have the necessary resources made available to them but they should

also learn to become more resourceful as well and learn to seek out and find more resources to share with others in their learning communities.

Further thinking along this concept of sharing information resources is the idea of having the students develop the skills needed to learn how to teach others the topics they have learned themselves. Learning to teach others, helps students develop much needed communication skills. Having the ability to teach others a topic also helps one learn much more about the topic itself. Leelawong, et al. (2001) believe that this may be due to "...the fact that teaching involves a number of constructive activities such as planning and organizing before teaching, explaining and demonstrating during the teaching activity, as well as analyzing and reflecting on student feedback during and after the teaching process."

Leelawong et al. (2001) also write "we concluded that social interactions in the form of teaching, even if virtual, could be a strong motivation for learning. Thus we decided to build on this *learning by teaching* framework, and let students explicitly teach a computer agent". I believe we can take the social aspect even further and say that a social aspect included in lesson plans whether in the form of teaching other students or a virtual agent and/or the inclusion of a well developed story with believable characters in the presentation of the lesson helps to make the learning more memorable and therefore helps the students retain the information much easier because it holds more meaning for them. As Anderson (2005) states in his book, "It is easier to remember less meaningful material if it is converted into more meaningful material" (p. 147).

Giving the students several different exercises where they are required to continuously answer questions that are posed to them or continuously study the topic they are learning until they feel comfortable with the subject material, will help them reach a point where they will not need to think as long and hard when the time comes for them to perform on their exams. Using

tactical learning as the strategy, “as students practice problems, they come to learn the sequences of actions required to solve a problem or parts of a problem” (Anderson, p. 289).

Games designed with compelling stories and engaging activities are great ways to provide the students with meaningful material complete with helpful learning exercises. Squire (2002) writes that “the most promising developments in educational gaming might come through games that are explicitly designed to support learning.” However, there has been much discussion about how learning with video games can leave the student players with naïve ideas of how the skills they learn in the game apply to real life situations. This can be made even worse when a game is the players only source of information in that subject area. For example, Barab et al. have found that when playing *Sim City 2000*, “... students definitely learn from exploring relationships between supply and demand and population growth and taxation, but they might also develop naïve concepts of how cities form, grow and evolve” (as cited in Squire, 2002). The transferability of lessons given in the games must be taken into account as well as the philosophy taken on by the students and their teachers. “A skilled *Half-Life* player might develop skills that are useful in playing *Unreal Tournament* (a very similar game), but this does not mean that players necessarily develop generalizable ‘strategic thinking’ or ‘planning’ skills” (Squire, 2002). The students must be taught to challenge everything they learn by following up and performing more research on that topic. They need to develop the mindset that not everything must be taken at face value. It is my belief that helping students become more independent thinkers and researchers who instinctively search for whether information given to them is supported, will help alleviate the problem of knowledge transferability from the gaming environment to the academic and real world environments.

The argument for the use of games in lesson plans is further supported by the fact that “researchers have found that memory for verbal material is greatly enhanced if one can develop visual images corresponding to the material” (Anderson, 2000, p. 108). The students will come to a better understanding of the material if there are visuals that can be used to support the textual information describing the topic they are studying. “Paivio has long championed the dual-code theory, which claims that there are separate representations for verbal and visual information” (as cited in Anderson, 2000). Depending on the subject being taught, having students speak, hear, or read out loud as they view visuals of the subject or topic they are learning will help to further reinforce the lesson. This idea is also supported by Baddeley’s theory of “working memory in which he hypothesizes that there are two systems, a visuospatial sketchpad, and a phonological loop, that basically correspond to the active components of Paivio’s dual code theory” ( as cited in Anderson, 2000).

With all the arguments I have made for encouraging the students to engage in their own research and study, I want to make it clear that I am not advocating removing the instructor from the learning environment. I believe that once the student engages in the types of independent activities discussed above, they are better ready to appreciate a lecture, workshop, lab and any other traditional instruction that an instructor normally engages the student in. The second hand knowledge available from the instructor can help to further alleviate the transferability problems we addressed earlier. Squire (2002) writes that “... the process of interpreting game play, of drawing analogies between symbolic representations in the game and their real-life analogs is one of active interpretation, and suggests that students might benefit from systematic explanations or presentations of information. In 2001, Schwartz, Bransford and other colleagues

also found “that students perform best when given access to lectures in the context of completing open-ended complex problem solving tasks” (as cited in Squire, 2002).

### **Independent Researcher Constructivist Design Model**

Taking into account the issues discussed above, the *Independent Researcher Constructivist Design Model* was born. The specific design principles guiding this model are outlined as follows:

1. **First Hand Experience (Observation):** Students observe and experience a first hand experience related to the subject being taught
2. **Constructive Activity (Interpretation Construction):** Students analyze their observations and attempt to make sense of their data from their personal knowledge database of past hand experiences. They also make use of any reference materials made available to them by the instructor and/or learning environment
3. **Second Hand Experience (Traditional Instruction):** Students receive traditional instruction in the form of a lecture, lab, workshop, etc...
4. **Information Resources:** Students make use of research material and information resources provided by instructor and/or learning environment
5. **Teamwork:** Students work together as they observe, interpret and make arguments for or against observations
6. **Study (Further Inquiry):** Students seek out more information as they work to develop a better understanding of the material and the arguments that support that material
7. **Teachable Agent:** Students compile their information and share with others
8. **Meaningful Material (Social Aspect):** Students receive compelling stories and/or participate in engaging activity games developed around the subject material. The stories

are meant to help the students remember specific concepts by making the whole lesson more meaningful and therefore easier to remember. The games are meant to provide the students with exercises that provide them with drills to assist with memorization

**9. Transferability:** Transferability of information presented in game are made explicit and applied to real world situations

**10. Visuals:** Images related to the subject matter are presented to the students to further assist in their understanding of the subject matter.

### CONSTRUCTIVIST LEARNING ENVIRONMENT

To demonstrate the use of the *Independent Research Philosophy Constructivist Design Model*, I will describe how the constructivist learning environment could appear for the target group of students in the Introduction to Haitian Creole listening comprehension course. The virtual textbook begins with an opening animation of a phone ringing (**Meaningful Material**). A boy named Sekou answers the phone and discovers that it is his aunt Pauline calling him from Haiti. She has invited him to come visit her in Haiti for the summer. She says “Your mother told me that you are going to begin taking your Haitian Creole foreign language classes soon so we thought it would be a good idea for you to get a head start by coming out here”. Sekou is excited to receive this call because he has always wanted to visit Haiti. Sekou quickly packs his bags and his mother takes him to the airport. Once his plane lands, his aunt is there to pick him up. She hands his *Haitian Creole – English* electronic dictionary (**Information Resource**) and tells him that his cousins can not wait to see him. When they arrive at his aunt’s home, he meets his cousins. He soon learns that his cousins have access to a special fantasy world full of magical characters. But once you are inside the world, you are only allowed to speak Haitian Creole. Each chapter of this virtual textbook is filled with an adventure filled story that requires him to

learn different Haitian Creole vocabulary words. This paper focuses on the *Directions* themed chapter of this virtual textbook.

The *Directions* themed chapter of the Haitian Creole virtual textbook starts off with an animated video of Sekou and his cousins outside of the fantasy world (**Meaningful Material**). Sekou's cousins tell him in English that there are many fun activities to engage in while in this world and that they will provide him with the directions on how to go from one place to another when they get inside. They hand him a map of the fantasy world and a communication device. Then, they tell him that once they get inside all he has to do is point to a location on the map and that they will provide him with instructions on how to get to that location. They also let him know that they are patient and that he can ask them as many times as he needs to. The animation ends with Sekou and his cousins entering into the fantasy world.

Once they enter inside the world, the students working in groups of two are presented with an interactive menu (**Teamwork**). The menu includes the map of the fantasy world on one side screen (**Visuals**), Sekou's cousins in the main center screen, a notepad for Sekou to translate his cousin's instructions on in another side screen and his electronic glossary of Haitian Creole words along with their English translations on another side portion of the screen. This portion of the lesson is designed to be a constructive collaborative lesson (**Constructive Activity**) that allows the students to construct their own translation of the directions given by Sekou's cousins.

When the students click on a location on the map, the center screen plays an animated movie of Sekou's cousins speaking in Haitian Creole as they give him directions (**Visuals**) from their present location to the new location pointed out on the map (**First Hand Experience**). The student can play the animation as many times as they wish (**Visuals**). They are also allowed to scrub back and forth through the animation in order to hear certain parts of the directions again

**(Information Resource)**. Sekou's electronic glossary also provides Sekou with audio recordings of each Haitian Creole word which they can use to compare with the words they hear in the animation's directions **(Information Resource)**. The audio file automatically plays each time the student clicks on each word in the glossary. The student is also expected to use the notepad portion of the screen to write out his/her translation of the words **(Constructive Activity)**. Once the students complete their translation of the directions, they indicate that they are prepared to move on by clicking on a submit button.

The interactive menu now changes and Sekou is shown in the main screen of the menu with his cousins all prepared to walk to their destination. His notepad is shown in one side menu. A navigation menu with left, right, and up buttons is shown in another side menu **(Meaningful Material)**. Using the directions he wrote down in his notepad as a guide, Sekou travels through the fantasy world using the navigation menu as they move them from screen to screen **(Visuals)**. If they do not arrive at the correct destination, an animation plays with Sekou's cousins taking him back to their original starting point and encouraging Sekou to start over again. At the end of this animation, Sekou is offered the opportunity to receive a hint. If he chooses to receive the hint, the parts of his translation that are incorrect are highlighted for him **(Information Resource, in the form of a Scaffold)**.

Once they successfully arrive at the correct destination, Sekou and his cousins play the games found at the new location as a reward. Examples of games include local sports games such as small soccer matches with the fantasy characters located in this world and racing games where they are allowed to ride or fly on the different fantasy characters. The game they play ultimately depends on the destination the students choose. Each destination will also present the

students with its own adventure further providing them with new opportunities to practice learning more about that chapter's vocabulary words on *Directions* (**Meaningful Material**).

For the purposes of this paper, we will assume that the students chose the destination that offers them the opportunity to race on the flying fantasy characters. The mini-game is a multiplayer game that provides the students with an opportunity to play the game together just as they were able to work together and translate the directions together (**Teamwork**). At the end of the mini-game, the lesson continues into an animation (**Meaningful Material**).

In this new animation, Sekou loses control of his flying fantasy character and he is flown away from his cousins to a new location in the fantasy world. Once he arrives at this new location he hops off of the beast and discovers that he has found an uncharted location of the fantasy world that no one has ever been to. He quickly calls his cousins on the communication device and they ask him to direct them to the new location. The animation ends and the lesson presents the students with a new interactive menu (**Meaningful Material**).

This new exercise is another constructive activity that will involve Sekou navigating his cousins from their location to his (**Constructive Activity**). The new interactive screen is a close up of Sekou's communication device. The main screen will include a bird's eye view of his cousins in front of a maze-like view of the fantasy world as they await his instructions (**Visuals**). A side menu will include a list of four sentence answers that the students must choose from to direct Sekou's cousins (**Meaningful Material**). Clicking on each sentence will play an audio recording of the sentence that the students can listen to (**Information Resource**). They may click on the sentence as many times as they wish. Another side menu will include Sekou's electronic glossary complete with the audio playbacks of each word for the students to hear and compare with the audio recordings of the sentences (**Information Resource**). Once the students decide

they are ready to choose from one of the four sentence answers, they may click on the submit answer button and watch as Sekou's cousins make their movements. The students must continue this activity until they successfully navigate Sekou's cousins to his new location (**Meaningful Material**). Once the students complete this activity successfully, the *Directions* themed chapter lessons will end and the students will receive a traditional instructor led teaching lesson (**Second Hand Experience**). During this session, the instructor will assist the students in applying their new knowledge to real world situations (**Transferability**). At the end of this lesson, the students would move on to be assessed in a series of homework assignments, presentations, and quizzes.

## ASSESSMENTS

### Assessing the Students

At the end of each chapter, there will be a mini quiz to assess how well the information in that chapter was picked up by the students. The first set of assessments will come in the form of games similar to those played by the students during the chapter lessons. However, this time the students will not be working on these activities together. They will complete each activity individually.

A second assessment will require that the students make sense of what they think were the academic lessons being given in that chapter (**Constructive Activity**). They will be asked to communicate this in the form of a paper complete with rules and notes that they may have developed to help them make sense of the material they came across (**Teachable Agent, because they are in effect teaching and communicating with the professor**). They will also be asked to point out areas they found most challenging. And if they were able to overcome those challenges, they will be asked to explain their strategies for overcoming the challenges.

Another assessment will include asking the students to present their own ideas as to how they feel this lesson plan could have been improved. They will also be asked to go forth and research more information on the topic using outside resources (**Study**). They will be asked to give a presentation in which they teach the other students in the class the new material they researched and prepared (**Teachable Agent**). And if possible, while teaching the class, they will be asked to use the new methods they felt would be an improvement to the instruction they received.

The final assessments will consist of a series of quizzes to test how well the information was transferred to real world use. The quizzes the students take will come in the form of traditional tests. The first quiz the students take will require them to draw out a path on map while follow instructions from the instructor. The second quiz will required that the students listen to the instructor and as each Haitian Creole word is spoken, they must write down the English translation. The third quiz will be an individual quiz where the instructor gives each student directional instructions that the student must physically perform. For example, if the Instructor, while speaking in Haitian Creole, directs the student to walk straight and turn left, the student must do as instructed. For the fourth and final quiz, the students will watch a very simple pre-scripted video between two Haitian Creole speakers. In this video, the first actor approaches the second actor and asks for directions to the library. The second actor gives the first actor the directions and then the first actor repeats the directions to see if he heard correctly. And then the second actor responds letting the first actor know that he is correct. The dialogue will only include the vocabulary used in the *Directions* themed chapter and it will be designed specifically for beginning learners in mind. This video will be shown 3 times and the students will be asked to translate it. Please note that throughout all of the assessments described above, the students

were only tested on their level of listening comprehension in Haitian Creole. The students are not tested on their ability to write or speak in Creole because that is not the objective of this particular lesson. They were only asked to show an understanding of what is being said by performing an act or writing down the English translation.

### **Assessing the Learning Environment**

In order to test the effectiveness of this learning environment and its ability to help students become better researchers, the students would be tested to see how well they reacted to material taught to them in a completely new subject area. Their results would be compared to a new group of students who had not received the same instruction given to those who received the lesson designed from the *Independent Researcher Constructivist Design Model*. The students who have received the lesson designed from the *Independent Researcher Constructivist Design Model* will be labeled the experimental group. The other group will be designated the control group. A candidate for a possible subject area is Ancient Ethiopia.

Both groups would be given a textbook on Ancient African History. As a homework assignment, they would be asked to read the chapter in their textbooks on Ancient Ethiopia and spend a week preparing a presentation for the class. Indicators that the *Independent Researcher Constructivist Design Model* was successful in developing more research oriented students are presentations by the experimental group that included material found in sources not in their textbooks. Other indicators would include a difference in presentation techniques. If the students in the experimental group included discussions about where they found their sources as well as why they might have searched elsewhere for information might help to distinguish them from students in the control group who may have also sought out information from outside of their textbooks for their presentations. Hearing the experimental group students explicitly state what

their thought process was as they decided on what information to research and how to present it would be interesting. Other indicators of a successful design would be if the students in the experimental group decided to share their own ideas for how they felt the instruction on Ancient Ethiopia could be made more effective and then go ahead and instruct the class using that idea.

Overall, I believe that one of the best indicators of whether or not the students in the experimental group successfully became more independent thinkers and researchers who instinctively search for whether information given to them is supported is if they begin a conversation in class where they discuss the differing viewpoints many historians have on the same stories. If they are able to see that there are other factors that influence the presentation of the information they read in their textbooks and that there are many sides to one story they will understand that there is always more to a story than may first appear. It is very likely that in their presentations, the students may report differing viewpoints especially if they seek out information from sources outside of their textbooks. This type of healthy dialogue will definitely help in alleviating the problem of knowledge transferability from the gaming environment to the academic and real world environments because it will help the students understand that games (educational games, included) are also simplified and do not offer the entire story and that they must be careful not to automatically assume that what works in a gaming environment will also work in a real world environment.

## CONCLUSION

I have presented a new model labeled the *Independent Researcher Constructivist Design Model* and shown how it can be applied to a constructivist learning environment. I have also discussed how the model and its environment can be assessed to determine its effectiveness. I believe that more of an emphasis on the student's philosophies towards learning and studying should be taken into account in order to assist them in becoming better learners. A great deal of work is needed to successfully apply this model to a lesson but if successfully applied, I believe it will help make the learning process easier for everyone in the long run, teacher and student included.

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