Digitally Enhanced Crossover Learning Strategies: Connecting Formal and Informal Learning Environments

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ABSTRACT

Learning in informal settings is no longer limited to museums and after school clubs where they can connect educational content that matters to the learner. The use of virtual reality, student phones, cameras, and digital recording capability have enhanced the informal learning environment to a point where it is only limited by our ability to ask the right question. The 2015 Innovating Pedagogy report highlights ‘crossover learning’ as one of ten innovations that are on the brink of having a profound influence on education (Sharples et al., 2015). Crossover learning combines the strengths of both formal and informal learning environments, and aims to provide students with the best of both worlds. This innovative approach is in response to what pedagogical research has been saying for decades: learners need to learn how, not what, to think. In addition, the approach places less focus on getting learner to perform, and more on equipping them with the knowledge and critical thinking skills needed in life.

INTRODUCTION

“Experience has long been considered the best teacher of knowledge. Since we cannot experience everything, other people’s experiences, and hence other people, become the surrogate for knowledge. ‘I store my knowledge in my friends’ is an axiom for collecting knowledge through collecting people” (Stephenson, K. undated).

In years past informal learning was limited to museums and in-class field trips where students can connect with educational content that is important to the learner. Today with the use of virtual reality, smart phones, high resolution cameras, and digital recording capability, connecting the learner to informal learning opportunities has never been more viable. Technology has enhanced the informal learning environment in such a way that where you want to take your students is only limited by our ability to ask the right question. This article will explore the concept of crossover learning as it refers to a comprehensive understanding of learning that bridges formal and informal learning settings.

Why do we need to connect the formal and informal learning environments?

Formal learning environments are usually relegated to institutions of higher learning, work place knowledge acquisition, and industry associations/affiliations. However, a learner’s exposure to these formal learning opportunities is dwarfed by the constant bombardment from informal information sources. Informal learning has become a significant portion of our everyday learning experience. The most common informal learning platforms are our exposure to personal networks of friends and family, communities we participate in, social media, and a preferred news source. Today learning through work related activities and exchanges within professional networks has become common place. (Siemens, 2014).
According to Gerber & Lynch (2017) there is no question whether or not impactful informal learning is happening in online environments. The question now is, Will we be able to research learning and learners within and across online spaces in order to better understand the confluences of meaning making that are occurring in diverse social media spaces?

**The Half-Life of Knowledge**

Currently one of the most pressing issues is the shrinking half-life of knowledge. The “half-life of knowledge” is the elapsed time from when knowledge is gained to when it achieves obsolescence (Gonzales, 2004). According to The American Society of Training and Documentation (ASTD) The quantity of knowledge in the world has doubled in the past ten years and is now doubling on an average of every 18 months. Some technical industries are achieving knowledge obsolescence within a ten-month period. As quickly as knowledge is changing, how can we as educators and trainers prepare our students for a work environment they may not participate in for another two to three years? Carlos Gonzalez suggests that “to combat the shrinking half-life of knowledge, organizations have been forced to develop new methods of deploying instruction” (2004, p. 8).

Over the past few years, we have seen that traditional learning settings (school, university, professional development) have increasingly supported learners in relating diverse learning situations that connect the classroom with informal and secondary learning:

*These connections work in both directions. Learning in schools and colleges can be enriched by experiences from everyday life; informal learning can be deepened by adding questions and knowledge from the classroom. These connected experiences spark further interest and motivation to learn.* (Sharples et al., 2015, p. 3). Sharples, M., Adams, A., Alozie, N., Ferguson, RA., FitzGerald, E., Gaved, M. & Roschelle, J. (2015). Innovating Pedagogy 2015: Open University Innovation Report (4).

**Connectivism**

Connectivism functions on the concept that knowledge is broadly shared across the multitude of information networks and is stored digitally in a wide array of formats. As it relates to learning theory, it accommodates digital learning environments and utilization of network structures for online communications. In this digital environment, the need for true digital literacy where learners can search current information and determine its viability as a source is greatly needed. So when a learner needs knowledge, but the answer is not known, the ability to access sources to fulfill requirements becomes a necessary skill. The continued exponential growth and evolution of knowledge, the ability to locate information that is needed is more vital than what was learned yesterday. As George Siemens states, "The pipe is more important than the content within the pipe. Our ability to learn what we need for tomorrow is more important than what we know today" (2014).

We currently have numerous examples of these knowledge repositories functioning quite effectively around us. When accessing an online library, one can find multiple data bases dedicated to current information within specific industries and disciplines. These peer-reviewed scholarly works represent several disciplines within EBSCO, Proquest, Ipswitch, investment Etc. However, as we search for repositories of information suited for informal learning environments, we need to look toward social media. The largest repositories of 360-degree videos, interactive virtual reality tours and games are Facebook, Google, and Oculus. They offer thousands of experiences to enjoy, participate in, and learn from in multiple formats.
Learner Retention Research

Research on learner retention rates show that when audio/visual information was presented within an hour on average, learners will have forgotten 50 percent of the information an instructor has presented. By the time 24 hours has elapsed forgetting will have deprived the learner of an average of 70 percent of new information that was presented. Astoundingly, after just a week's time, the average learner will have forgotten 90 percent of that same presented material. Research also shows us that information that is presented in only a visual format reported a retention rate of just ten percent. However, when a visual presentation is supported with an audio presentation, studies report a 30 to 40 percent retention rate. When the learner is presented with visual and auditory material and supplemented with application oriented exercises research saw retention rates soar to the 90 percentile (https://www.nhi.fhwa.gov)

Crossover Learning

The “2015 Innovating Pedagogy Report” highlights Crossover Learning as one of ten innovations that are on the brink of having a profound influence on education (Sharples et al., 2015). Crossover learning combines the strengths of both formal and informal learning environments and aims to provide students with the best of both worlds. This innovative approach is in response to what pedagogical research has been saying for decades: learners need to learn how, not what, to think. In addition, the approach de-emphasizes the focus on learner performance, and more on providing them with the knowledge and critical thinking skills needed in life in today society.

These crossover learning experiences exploit the strengths of both environments and provide learners with authentic and engaging opportunities for learning. Since learning occurs over a lifetime, drawing on experiences across multiple settings, the wider opportunity is to support learners in recording, linking, recalling and sharing their diverse learning events. Sharples et al argue that “these connections work in both directions. Learning in schools and colleges can be enriched by experiences from everyday life; informal learning can be deepened by adding questions and knowledge from the classroom. These connected experiences spark further interest and motivation to learn” (2015, p. 3). Consequently, this study sought to incorporate crossover learning into a variety of classes in order to determine whether Crossover Learning enhanced students understanding and retention of course content.

METHODOLOGY

This study included a total of seven college classes over a period of two years. All students were asked to complete the exercise during the course of the week and complete a quiz on the information presented. The students were then asked to complete another quiz on the information presented after 3 additional weeks. The data provided from these activities is represented in the following information.

CROSSOVER LEARNING ASSIGNMENT FOR THE STUDY

Course: English Grammar

Students were required to spend the week observing their daily environments and identifying occasions when the plural or possessive was used incorrectly. For example, a student might see a sign on a storefront where the plural form had been used incorrectly. Once identified the student needed to take a picture with his or her phone and post it to the class blog with an explanation of the error and then a correction with the proper usage.
We studied three total classes, two used the crossover curriculum and one was presented using audio and visual techniques only. Students were tested on information at time of presentation and at end of course.

<table>
<thead>
<tr>
<th>Testing at time of assignment completion</th>
<th>End of Course (three weeks later)</th>
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<tbody>
<tr>
<td>Crossover</td>
<td>48 students average score 90.2%</td>
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<tr>
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<td>48 students average score 87.7%</td>
</tr>
<tr>
<td>Audio/ Visual</td>
<td>27 students average score 86.3%</td>
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<td>27 students average score 81.4%</td>
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**Course: Financial Investment Strategies**

The week’s curriculum was dealing with the stock market:

The students were required to view a specific 360 degree recording of a segment of a trading day on the New York Stock Exchange. On their visit to the trading floor they are required to identify, interpret, and calculate gains and losses on specific stocks. Additionally, they were challenged with identifying the actual day and time of the recording and closing results for the previously calculated stocks.

We studied two total classes, one used the crossover curriculum and one was presented using audio and visual techniques only. Students were tested on information at time of presentation and at end of course three weeks later...

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<tr>
<td>Crossover</td>
<td>28 students average score 94.1%</td>
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<tr>
<td></td>
<td>28 students average score 88.9%</td>
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<tr>
<td>Audio/ Visual</td>
<td>25 students average score 83.6%</td>
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<td>25 students average score 79.6%</td>
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**Business Ethics**

The week’s curriculum was dealing with Business ethics:

The students were required to fact check in small teams a series of statements provided by the instructor and determine what percentage of the statement is accurate utilizing multiple verifiable resources. Then the team had to rephrase the statement so that it was accurate and still sent the desired message.

We studied two total classes, one used the crossover curriculum and one was presented using audio and visual techniques only. Students were tested on information at time of presentation and at end of course.

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<tr>
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**SUMMARY OF KEY FINDINGS**

This study suggests that when Crossover Learning is used in conjunction with visual and audio presentations of content, learners achieve a deeper understanding of the material and retain more of the information that those who did not engage in Crossover Learning opportunities. However, this researcher would be remiss if he did not acknowledge the fact that the students in the business ethics class had considerable trouble fact checking certain statements, due to the way the statements were phrased determining the factual nature of a statement was difficult. Students found it necessary to develop a scale the represented the degree to which each statement was factual. This ambiguity seemed to have a negative impact on their understanding of the material.
REFERENCES


