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Constructivism Analysis: SD 27's Virtual Rural Secondary School

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March 6th, 2011

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In September 2009, I taught Math 8 to 22 students who were separated by hundreds of kilometres, but connected through a virtual classroom. This was the pilot year of School District #27's (SD 27) virtual Rural Secondary School (RSS) that offers grade 8-10 course instruction in English Language Arts, Math, Social Studies, and Science. This article examines how constructivism is and can be used to promote active learning in SD 27's RSS. The socio-cultural influence of Vygotski and others validate this analysis that is framed in a knowledge-centred, learner-centred, assessment-centred, and community-centred structure of effective learning (Bransford, Brown, & Cocking, 1999). This exploration includes personal experience, and suggests that Assessment for Learning (AFL) is rooted in social constructivist pedagogy and informs good use of technology in an online learning context.

Background

SD 27's virtual Rural Secondary School (RSS) was borne to address the needs of our rural grade 8 – 10 students. SD 27, in the Cariboo-Chilcotin, is a vast geographical area near the size of New Brunswick. It is comprised of three distinct aboriginal nations, where many communities are isolated and removed from the conveniences of central service cities including 100 Mile House and William's Lake. Schools in these isolated areas (e.g., Dog Creek, Anahim Lake) have low student populations (20 – 50), cover grade span from K - 10, are largely aboriginal, and often include class configurations of up to four grades. The

demands of a mono-grade curriculum system, declining enrollment, retaining children in community, and preparing students for eventual placement in senior secondary (10 - 12) school, led to the development of the virtual RSS.

Planning and development of this virtual school began in September 2007, and the first classroom sessions began in September 2009. Grade specific core courses of English, Math, Science, and Social Studies are offered within a common time table. Rural students are grouped in virtual classes of 15 – 30 composed of aboriginal and non-aboriginal students within the local public schools, and students in home schooling programs. Elluminate Live! is used as the classroom meeting space where students meet with their teacher and classmates for synchronous instruction. Moodle course management system is used to house the resources and supports various collaborative (e.g., forums, wikis) technologies.

Program Facilitation

While the students are dispersed over a significant geographical and cultural array, the teachers in the RSS are connected and communicate regularly as to the needs of their clientele. Instructional choice varies within the RSS, and there are elements of constructivist pedagogy in use.

Understanding a learner's prior knowledge and skill set, interests, and beliefs can be difficult to determine online, but various strategies are used to ascertain the learners' profile. Brian Davidson (personal communication, February, 2011) who has instructed English Language Arts through the RSS uses a survey to assess interests, literacy ability, and learning goals. Jane

Hancock (personal communication, February, 2011) has a questionnaire that asks students more personal information including five things about themselves, four places they would go, and two people they would have dinner with, living or dead. This provides valuable information about the learners that might be otherwise difficult to determine when meeting online.

Some teachers in the RSS will present visual learning objectives or learning sets at the start of a lesson. For example, Brian Davidson (personal communication, February, 2011) recommends starting each lesson with two learning objectives, one that is literacy based, and one specific to the skill or content. Using literacy based learning objectives is based on linking a learner's prior knowledge to the lesson at hand, and to support language development specific to the discipline. Brian initially asked the students to re-state learning objectives with "I" statements; however, many of the students have been reluctant to speak and take a lead role in talking about their learning. The online learning space is somewhat anonymous and can be easy for students to hide within.

Jane Hancock (personal communication, February, 2011) uses the break out room function of Elluminate Live! to have students collaborate in small groups, but finds that she is not able to do this until late in the semester when a culture of social learning has been developed. Again, the anonymous learning space makes it difficult to encourage this type of active participation. I did not use the break out rooms for instructing Math 8, but I did use question driven guided practice, and found that the students actively participated. I did observe students

engaging and participating in math instruction who normally had not engaged in a face-to-face classroom setting.

The regular classroom activities used in the virtual RSS are similar to a face-to-face classroom and include journaling, novel studies, research essays, etc. Assessment and evaluation strategies vary depending on the instructor; however, a common concern of teachers is the inability to provide students with face-to-face descriptive feedback. Students have been encouraged to give each other feedback in forums and discussions, but only a small percentage are inclined to do so.

The online environment removes the ability of a teacher to be responsive to a learner's body language that normally provides valuable feedback regarding a learner's comprehension and engagement in the learning. This inability to address the immediate behavioural cues of the learners in the RSS is accommodated somewhat by the in-class teachers, parents, or support staff who are physically present with the students as they learn. While these people may not actually be providing the direct instruction, they are able to assist students with motivation, and to help encourage them to stay on task.

Norm-referenced evaluations culminating in percentages and grades are common in the RSS, but some teachers, including Brian Davidson and Jane Hancock, provide students with ongoing descriptive feedback. Assignments are regularly returned to students (via Moodle) with specific information and directions regarding how to improve, but the students rarely take the opportunity to use the information to feed their learning forward. There is a culture amongst

the students that once work is submitted, it does not have to be considered for revision.

A Centred Model for Instruction

According to Bransford, Brown, & Cocking (1999), effective learning environments can be measured through four centres of focus: knowledge, learner, assessment, and community. Anderson (2008) suggests that a theory of online learning includes these four centres of focus with an emphasis on student-content, student-student, and student-teacher interactions. These features of an effective learning environment support constructivist pedagogy whereby a learner is encouraged to make meaning of his environment, and build knowledge on an existing, culturally shaped, schematic framework.

Knowledge-centred learning focuses on the language and beliefs of the discipline under investigation (Anderson, 2008) and supports a student to content interaction whereby the learner is actively accommodating content specific information. A goal of the RSS is to provide our students with the specific pre-requisite courses necessary to advance towards secondary school. Prior to this program, teachers taught multi-grade configurations of up to four grades, where providing grade specific learning outcomes was a challenge. Often subjects were taught in themes and teachers would vary their expectations in terms of skills and processes depending on the age and development of the learner. The RSS supports knowledge-centred learning and offers students the course, content, and language specific to their grade.

While the language and knowledge of the discipline needs to be accessible to all, a learner-centred focus of instruction and design values the unique attributes that each learner brings to the environment. These attributes include the learner's existing schematic framework, pre-requisite knowledge, and the culture and beliefs that influence their worldview (Anderson, 2008). In a comparison of rote versus meaningful learning, David Ausubel points out that learner's will actively seek knowledge when it is relevant and linked to their schematic knowledge structure (Novak, 1998). The student demographic for SD 27's virtual RSS is of dramatically different cultural contexts and requires teachers to plan for the broad scope of learner backgrounds.

Assessment-centred learning is the third element of an effective learning environment. Assessment of and for learning informs both the teacher and student about the learning progression. SD 27's Rural Strategies team did not develop the virtual school with a specific learning/assessment philosophy in mind, but an emphasis has been placed on Assessment for Learning (AFL), or formative assessment. As noted by Black and Wiliam (1998), increasing the amount of descriptive feedback (formative assessment) while decreasing the amount of norm-referenced evaluative feedback, will dramatically increase the rate of learning for our most vulnerable students.

Community-centred learning assumes that the social impact on learning is paramount and that the development of a community of learners, community of practice, or community of inquiry is directly related to the cognitive growth of individual members (Anderson, 2008). Vygotsky most notably supports this type

of socio-cultural constructivism. Vygotsky asserts that “[t]he [learning] path from object to child and from child to object passes through another person” (Vygotsky, 1978, p.30). If we disregard the social culture that comprises a learning environment, we do not nurture fruitful student-student, and student-teacher interaction.

Knowledge, student, assessment, and community centred learning are elements of an effective learning environment, and can be used as a foundation to view the efficiencies of an online learning environment.

Assessment for Learning

Knowledge, learner, assessment, and community centred learning provide a foundation to build an effective learning environment. Constructivist pedagogy varies, but assumes that a learner is accessing prior knowledge, constructing new meanings, learning socially, self-regulating, and setting goals for further development (Mathews, 1994). Centred learning and constructivist pedagogy are complimentary and can be implemented effectively with Assessment for Learning (AFL) instruction. This learning ideal should be more fully adopted by SD 27’s virtual RSS development team, as it would increase the programs ability to reach their most vulnerable learners.

Assessment for Learning is a high yield teaching and learning strategy that is validated through the exhaustive research of Black and William. Black and Wiliam’s (1998) prove that providing a learner with descriptive feedback while at the same time, decreasing the amount of summative evaluations, will dramatically increase their rate of learning. Providing an environment rich with

descriptions of how the learner is learning, will assist them to self assess, set goals, and ultimately drive their future learning endeavours.

Anne Davies (2007) identifies six key strategies of AFL that teachers use to increase the rate of student learning.

1. Involve students in setting and using criteria.
2. Engage students in self-assessment.
3. Increase the sources of specific, descriptive feedback.
4. Assist students to set goals.
5. Have students collect evidence of learning in relation to standards.
6. Have students present evidence of learning in relation to standards (p. 55).

Using these strategies as the backbone for instructional planning would help ensure that the virtual RSS is supporting active knowledge acquisition. Involving students in setting and using criteria can be done synchronously online, or through collaborative software including discussion forums and wikis. Engaging students in self-assessment can be done with checklists, self-rating scales, descriptors, etc.; all of which can be submitted electronically for the instructor's perusal. Descriptive feedback can be provided in an online environment with potentially more options than a face-to-face context. Online software like Google Docs and wikis are great tools to demonstrate learning, and can be used by the teacher to insert direct, descriptive feedback. These tools can also be used for group work, collaboration, and peer assessment. The online environment affords the learner with great variety to select and present their learning. Electronic portfolios can be easily created and accessed from home.

Conclusion

School District 27's virtual RSS has begun its second year of programming, and is showing signs of increased student success. Sufficient data has not been collected to compare graduation and/or dropout rates of students, but significantly more rural students are passing their grade 8-10 courses, and are heading to secondary school with adequate training and credentials.

Qualitative anecdotes from teachers tell a story of increased student engagement in learning that hasn't been seen in the rural/remote schools of SD 27 for some time. Utilizing a knowledge, learner, assessment, and community centred learning foundation, coupled with purposeful use of AFL could shape SD 27's RSS future as a leader in constructivist online learning.

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