Learning Activity Design Proposal:

Technology-Enhanced Woodwork Project and Course Design -
Planning through Learning Design and Educational Technology Theory

Bryan Barranti

Department of Curriculum and Instruction, University of Victoria

EDCI 565: Research and Practice of Learning Design

Dr. Michael Paskevicius

February 19, 2024

Goals of the Learning Activity

The goal of this learning activity is to develop a written representation of the typical learning design of one of my woodwork projects or woodwork courses. I plan to develop and implement differentiated instruction practices to foster student engagement through technology-enhanced learning (TEL) within the shop environment of my courses and incorporate Universal Design for Learning (UDL) practices to meet the needs of all my learners. I will explain the theoretical reasoning behind the structure I use to design my projects/courses with a literature review of relevant topics; develop a new project plan format in Google Docs; and possibly create additional visual aids for students to follow along with.

Learning Context

My current teaching assignment is as a Grade 7-9 Woodwork teacher at Dr Kearney Middle School in Fort St John, BC (SD60). We have a diverse student population of around 630 students; our school is overpopulated for its physical size resulting in a very crowded space and many oversized classrooms. Fortunately for me, we have local collective agreement language limiting shop classes to 24 students which is mostly adhered to due to safety considerations of a shop environment. With my smaller classes I am more easily able to teach within the framework of our vision at Dr. Kearney to "guide and care for all students by fostering authentic and inclusive relationships within our diverse community, valuing everyone's unique stories, experiences and skills" (FESL 2023).

My classes are conducted in person in my school woodshop. Our school runs with a Day 1 / Day 2 schedule with 4 classes per day so each class essentially meets every second day for 1 hour. I have a well-equipped shop with all of the standard woodworking machinery, as well as a CNC laser machine and a CNC router table. A class set of

laptops was just purchased recently for our Tech Ed department, stored in my shop, so access to technology should not be a constraint on me implementing a more technology-enhanced learning environment.

Learning Activity Plan

- *Project Overview*
  - An overview description of the paper
    - General project plan with Learning Outcomes (as stated above)
    - Learning Context (as stated above)
    - General description of sections within the paper
- *Literature Review*
  - Learning Theories:
    - Constructivism - building upon prior knowledge and experiences
    - Constructionism - physically building of projects
    - Connectivism - social learning theory, peer collaborations
  - Frameworks
    - SAMR - Incorporating the SAMR framework into constructing a woodwork project can enhance students' engagement, creativity, and critical thinking skills by leveraging technology to transform the learning experience.
      - Substitution (manual tools to machinery; printed plans to digital plans and slides)
      - Augmentation (3D models, online tutorials, instructional videos for projects/safety instructions for tools and machinery, YouTube links),
      - Modification (design alterations, design software), and
      - Redefinition (CNC creations)
  - Improving Student Engagement through Technology-enhanced learning (TEL)
  - UDL Principles
  - Differentiated Learning practices

- *Learning Objectives of the Learning Activity*
  - Curricular content and
  - Curricular Competencies (cite: BC Ministry of Education)
- *Learning Design Activity*
  - Describe Structure of Course with Sequence of Learning Activities
    - Shop Safety, Measurement, Hand Tools, Machinery Demonstrations and Safety Tests, Progression from hand tools to machinery through subsequent projects, assessment (cite: *Heads Up For Safety, 2018*)
  - General project design: Learning Activity Design
    - Small version of Learning Activity Design poster
    - Theory-based descriptions for each step
- *Conclusion with Future Considerations to Leverage Technology-Enhanced Learning*
  - Conclusion
    - Summarize key points in Learning Activity Design
  - Future Considerations
    - Create a Google Classroom to share all project plans, handouts, and other resources
    - Create Google Docs for all projects with new format
    - Create Slides for step-by-step procedures with pictures for all projects
    - Create videos for step-by-step procedures for all projects
    - Create Safety Videos for all machinery
    - Create Google Docs and Forms for all tests - updated from the basic *Heads Up For Safety* printed tests - with updated pictures of our actual shop tools and machinery
- *References*
- *Appendix*
  - Sample Project Plan(s)
  - Full-page Learning Activity Design poster

- ○ Samples of old-style paper tests or handouts to compare to newly designed versions

Design Presentation

- ● Google Docs for main write-up and project plans
- ● Visual Aid poster for Learning Design Activity (designed on canva.com - svg format)
- ● Possibly create Google Slides for step-by-step procedures with pictures (if time permits)
- ★ Convert all to pdf formats for ease of sharing
- ★ Provide link to Google Docs folder or Google Classroom if developed (if time permits)