

Adult Education and Dialogue: Utilizing Project-Based Education as a Method to Provide Transformative Change in Both Students and Teachers

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Abstract

Knowledge is built upon personal experiences and the information to which we have access. My area of research is in communicating the language of business (accounting) to non-business learners. I have found that both communication and motivation are primary factors in transformational learning. To this end, research has shown that project-based education improves student skills, and transforms the traditional classroom for both teachers and students. Combining project-based education with adult dialogue education provides a transformative method of education that encourages student-driven, collaborative project-based learning as well as opportunities for teachers to reflect upon their epistemology and pedagogy.

Keywords: Instructional technology, Adult dialogue education, Project-based education, STEM, Transformative instructional approaches

Introduction

In order to have an understanding of my theory of learning, I must discuss my epistemology and beliefs about intelligence. I believe that knowledge is relative and it should be evaluated based upon personal experiences and the available information. I define intelligence as the ability to relate new knowledge to existing knowledge in a variety of situations. I believe that intelligence is not fixed and knowledge is not discrete or constant. Consequently, I subscribe to the incremental theory that intelligence is changeable and can be improved.

My philosophy of education is grounded in my personal beliefs about the nature of people and learning. I recognize that operant conditioning is beneficial for learning basic facts and principles. This is an area in which the use of various methods of instructional technology utilizing authentic activities can accomplish much. Liberal education provides practice for our

mind to explore connections, which satisfies the social, esteem, and self-actualization needs.

Learning is a personal experience and knowledge is based upon personal experiences and the information to which we have access. To this end, project-based education allows for authentic learning activities. A liberal education provides new areas from which we can draw valuable insight for problem solving. Humanistic education places value in the whole person and underscores how relationships are critical to our development. Radical theory wants us to question the existing constructs, dismantle the status quo, and reshape our perceptions of reality. The radical ideas about communication (adult dialogue education) is an area that I continuously analyze in my current practice and have utilized in face-to-face courses. This study looks at prior research on project-based education and its intersection with technology for providing a transformative change in both teachers and students.

Full listing of authors and contacts can be found at the end of this article.



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What is Learning?

According to Kirschner et al. (2006), Learning is defined as “a change in long-term memory” (p. 75). This is in contrast to Hmelo-Silver et al. (2007), where they indicate the goal of education is to learn content and soft skills; such as epistemic practices, self-directed learning, and collaboration. A broader definition can be gleaned from Gagne’s Events of Instruction; where learning is the process of “getting the student from one state of mind to another” (p.178). The importance of collaboration is supported in Merrill (2009) during the application principal. Specifically, when learners “actively engage in interaction with one another rather than passively observing the demonstration” (p. 47).

A broader definition is needed than what was proposed by Kirschner et al. (2006). According to Gagne’s Events of Instruction; learning is the process of “getting the student from one state of mind to another” (p.178). Further, the importance of collaboration is supported in Merrill (2009) during the application principal. Specifically, when learners “actively engage in interaction with one another rather than passively observing the demonstration” (p. 47). This definition supported the Hmelo-Silver proposed definition for the purpose of education.

I define a good learning experience as one in which any of the following activities occurred:

- I obtained valuable information that helped me to understand a situation or experience I have encountered in the past either personally, academically, or professionally.
- The experience provided tools to better resolve existing issues or presented alternatives of which I was not aware.
- The experience created a springboard for learning growth.

I define a bad learning experience as one in which:

- I received no benefit (including knowledge acquisition of skill development) during the process or afterwards.
- That I didn’t understand the purpose of the experience.
- The experience did not meet the objectives stated for the experience.

What is Project-Based Learning?

Thomas (2000) conducted a review of the research on project based learning and outlined five components that he felt were necessary in a project for it to fit under the umbrella of project based learning. These elements

included: centrality, diving question, constructive investigations, autonomy, and realism. Further, Brundiers and Wiek (2013) reviewed several articles to posit key features of problem and project based learning. The intersection of these two strategies included six elements; engaging students in real-world tasks, student-centered/small group work, simulate professional situations, use of multiple sources of information, teachers as facilitators and a resource, formative and performance-based peer evaluations.

Taylor (2017) defined project-based learning in his abstract as “a teaching technique in which authentic, real-world projects are used as the primary vehicle to drive the student’s learning experience” (p.1). Nilsson (2012) outlined a method for implementing project-based education called the “working seminar.” It is based on the assumption that groups with a common base of knowledge increase both the group results and the individual learning.

The Buck institute for education (2015) similarly provided seven design factors that should be utilized for a successful implementation of project based education (see Fig.1).

Teacher Transformation

Even now, the field of accounting and finance is dominated by white males over the age of fifty. As such, aspects of a liberal education such as collaboration, interpersonal skills, and the skill of discernment are integral. I have used the Socratic Method when students ask questions in the past. Especially, when it involves an authentic issue and the group is more than capable of formulating a response and sharing it. A transformation I have made through the use liberal education and adult dialogue included the incorporation of the liberal education model by having several students who have briefly discussed an issue with peers (think, pair, and share) to pull pieces of their understanding and write them with bullets upon the board. Then I will call on several other students to sum up what they heard their fellow students say, and add to what’s been bulleted or question further. In the end, I will call for a “vote” using clicker devices to poll all students based on the shared discussion. This represents liberal education in two ways. First, it allows the students to hear stories firsthand and draw their own conclusions about possible scenarios and their implications. Second, it lets the learner know that not all knowledge is central but but dispersed throughout a group and can be understood differently.



Figure 1. PBL design factors (Buck Institute 2015).

| ATTENTION | RELEVANCE | CONFIDENCE | SATISFACTION |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gain Attention <ul style="list-style-type: none"> • employ splash page or other graphics | Establish Objectives <ul style="list-style-type: none"> • clarify why lesson is important • provide a lesson overview • assign preliminary readings | Provide Learning Guidance <ul style="list-style-type: none"> • offer opportunities for guided and independent practice • ensure a gradual progression from more easy to more difficult material • consider scenario-based exercises • assign projects | Provide Feedback <ul style="list-style-type: none"> • offer immediate feedback • offer consistent feedback |
| | Stimulate Prior Recall <ul style="list-style-type: none"> • illustrate the learning • relate the learning to something they already know | Elicit Performance <ul style="list-style-type: none"> • allow learner to expound on learning • utilize recall strategies • allow learner to "use" new learning | Assess Performance <ul style="list-style-type: none"> • ensure that assessment is equitable • ensure that assessment is based in higher-order thinking skills |
| | Present Lesson Content <ul style="list-style-type: none"> • distribute lecture notes • provide definitions • provide examples • offer synopses | | Enhance Retention <ul style="list-style-type: none"> • focus on application |

Kirschner et al. (2006) take the position that epistemology or how an expert does something is not equivalent to pedagogy or how to learn the field. To support this, they offer DeGroot's chess results where it is concluded that it is the extensive experience of professionals stored in long-term memory that enables them to be good at what they do. They conclude by indicating that the shortcoming is due to the differences between behaviors and methods known to experts as compared to novices with no foundation to draw from.

In examining my assumptions on adult learning, I would like to highlight four that have been discussed extensively in the literature. The first is that adult learners have experiences from which to draw on to support their learning. The second is that adult learners need to understand how the information they acquire relates to what they already know. This allows them to see relevance and improves motivation. Third, adult learners have positive and negative self-efficacy in various domains that affect how they approach learning. Finally, a "readiness" to learn arises from an experience in which the individual realizes that they don't have the skill, knowledge, or information to address it.

Theories that address these assumptions include Malcolm Knowles theory of Androgyny (2012), which posits that there are particular characteristics of adult

learners that differ from the way children learn. These assumptions included self-concept, experience, readiness/orientation to learning, motivation to learn and relevance. Some critics point out that the perspective of andragogy supports "white middle-class values" and does not include the "relationship between self and society" (Sandlin, 2005, p. 27).

In contrast, Hmelo-Silver et al. (2007) indicate that the shift in importance stems from sweeping reforms in education based upon the idea that the purpose of education is to prepare students for the workplace. As such, "content and practice" should be central learning goals. Furthermore, the relationship to long-term memory storage is emphasized because there is a direct correlation of the "influence of the learning context on the accessibility of the knowledge for future use" (p. 105).

In forming my response to rather project based education should be supported, I considered the results of these issues. Project Based Education should not be categorized like "discovery" and other "experiential" forms of instruction. Additionally, the definition of learning used by Kirschner et al. (2006) is too narrow and does not fully encompass learning as does the definition of the purpose of education put forward by Hmelo-Silver et al. (2007). This means I discount that minimally guided instruction is ineffective for student learning,



due to evidence presented that demonstrates the conditions that it is effective.

The decision to use project based education in a course should be based upon the broader definition of learning. Kirschner et al. (2006) present compelling evidence as to why the content and timing of the guidance in inquiry based instruction must be scaffolded to be successful. That is to say, in order to reducing working memory overload, scaffolding will keep learning with the proximal development zone. Without scaffolding, I would not recommend the use of inquiry-based instruction under any circumstances.

Student Transformation

Blumenfeld, Soloway, Marx, Krajcik, Guzdial and Palinscar (1991) published a study from the University of Michigan with the intent of exploring projects and examining difficulties that students and teachers encounter, and describing how technology supports both teachers and students for projects. In summary Blumenfeld et al. (1991) posit that projects allow for the integration of both thinking and motivation for students. Historically, tasks utilized a programmed instruction approach which has resulted in some students having “poor attitudes toward learning and schooling.” (p. 371). An area of weakness for many students is group work and collaboration. In essence learning to work effectively in groups. Bell (2010) discusses how projects provide intrinsic motivation because students can present their best selves through the use of individual learning styles and preferences.

Hmleo-Silver et al. (2007) states that PBL “supports the development of reasoning skills, problem-solving skills and self-directed learning skills” (p. 103). This statement implies that these are skills that can be carried over to other areas. According to Vygotsky (1978), article entitled “Interaction Between Learning and Development,” learning in one general area will not carry over to another. It referenced the study of adults whereby training on discovering the length of short lines did not improve the participants’ ability to determine the length of long lines. This points to the importance of learning in context. It concluded that “special training affects overall development only when its elements, material, and processes are similar across specific domains” (p. 83).

Technology

Taylor (2017) completed a study to answer several questions regarding the use of technology with project-

based learning. Their study used two web-based surveys to obtain data from participants at Georgia Tech. One survey was to teachers the other for students; the survey garnered 23 responses from teachers with prior PBL experience and 52 responses from students. Although the response rate is low, there were some interesting findings that I used to triangulate with information from other research. Of primary interest to this study, was the findings about PBL-specific teaching practices that technology provided the greatest support and overall how integral technology was to the delivery of project-based learning. “Nearly 74% of teachers and 63% of students thought that technology tools were either very important or extremely important relative to their successful delivery of Project-Based Learning” (Taylor, 2017, p. 7).

The results of Taylor (2017) suggest that while technology can help support all PBL Teaching Practices, it is most impactful in three areas: (1) Helping teachers to design and plan for the successful execution of their projects, (2) Providing teachers with the ability remain in close contact with students throughout the project, as well as providing students the ability to collaborate with each other regardless of location. (3) Giving students the creative freedom to explore the topics underlying their projects in ways that are meaningful to them, while simultaneously ensuring they are equipped with the core knowledge needed to stay focused.

The need for minimal guidance is also supported by Gagne’s Events of Instruction (as step 5; “Providing learning guidance” (p. 162). The authors stated how too much guidance is considered “condescending to the quick learner” (p. 188). The importance of scaffolding is supported in Merrill (2009) “First principals of Instruction,” with the application principle where the author states that learning is improved when “coaching is gradually withdrawn for each subsequent task” (p. 47). This supported the need for scaffolding in minimally guided instruction.

Challenges

Kirschner et al. (2006) refer to PBL and IL as having no guidance, they cited these teaching strategies as “unguided” when discussing “Research Comparing Guided to Unguided,” the “Knowing Less After Instruction” and the “Empirical Evidence about Science Learning from Unguided Instruction” sections of the article. Consequently, the authors use examples of “unguided” research as a basis for their knowledge claim that PBL and IL are ineffective for learners.



In contrast, Hmelo-Silver et al (2007), demonstrate numerous examples that PBL is a guided form of instruction even if minimal; through the use of “scaffolding and guidance to facilitate student learning” (p. 99). The authors included the Geier et al research to support this. This research was particularly strong due to the longevity of the study and “observed gains up to a year and a half after participation in inquiry-based instruction” (p. 104).

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Discussion

In forming my position as to rather or not inquiry based instructional strategies should be supported, I considered the results of the following issues:

- How does project-based education improve learning?
- How does the role and beliefs of the teacher change with Project Based education?
- How are students’ roles changed as a result of project based education?
- What role does technology play in project-based education?

Project based education improves intrinsic motivation by working with a variety of learning styles and student preferences. The level of autonomy provides a sense of ownership for the results. Using project-based instructional strategies requires a transformation in teachers. They must rethink their role in the classroom from dictator to facilitator. The projects selected will not have a right or wrong answer. Additionally, teachers must be willing to accept an element of unscripted learning.

Project based learning requires that students change their approach to the classroom. They must go from the “baby bird” method of receiving knowledge to assuming an active role. Many students will need assistance in how to actively listen to others and engage in dialogue that requires negotiation. Finally, the ability to synthesis multiple ideas of sources of information into a cohesive thought pattern must be achieved. Technology supports learning through the variety of sources and means of gathering information, increased volume of information, and multiple means of delivering artifacts. In conclusion, teacher and student transformations benefit from readily available resources, such as technology, to support them through challenges.



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