Finding a Unified Field Theory for Instruction: Utilizing Case Studies to Engage Deeper Learning About Complex Issues

William M. Timpson, Jehan Alandejani, Antonette Aragon and Debra Kaye Holman

Colorado State University, USA
Email-william.timpson@colostate.edu

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Abstract

Einstein spent much of his adult life pursuing a unified field theory that could explain the complexities of the physical universe. Case studies represent an interface with the world that can provide meaning for academic studies too often constrained by reductionist curricular objectives that focus on what can be tested in standardized formats. As such case studies offer one avenue to a “unified instructional field theory” that embraces the complexities of higher level learning within a consciously sophisticated approach to teaching. In his seminal work, The Structure of Scientific Revolutions, Thomas Kuhn (2012) noted how old paradigm promotes “increasingly rigid” thinking (64). William Perry (1999), in turn, argued for a focus on learning in postsecondary education, in particular, that would help students handle increasing levels of complexity and ambiguity and embrace what Ramsden (1992) referred to as “deeper levels of learning.” The themes that emerged in this study of case study applications offers testimony to the higher order thinking we want in college, university, and high school classrooms, especially when focusing on controversial topics like peace, conflict resolution, and reconciliation.

Keywords: Physical Universe, Sophisticate, Structure, Revolution

Finding a unified instructional field theory

Albert Einstein spent much of his adult life pursuing a “unified field theory” that would address the anomalies in how the physical universe was understood, how, for example, light could be simultaneously particle and wave. Too often, our minds—and instructors at our colleges, universities and schools—want to simplify and reduce complexity to more manageable and dichotomous knowledge, i.e., what is right and wrong. Examinations, especially when machine scored, are notoriously resistant to handling the messiness of the real world and all its shades of grey. As such, we will argue here for a sophisticated approach to instruction—in this instance, through case studies—that best captures the rich complexity and ambiguity of reality.

Reviewing the history of science, Thomas Kuhn (2012) described the periodic shifts in thinking that accompanied breakthroughs of understanding, for example, when Albert Einstein introduced relativity and challenged prevailing notions of a simpler, more mechanistic universe. In K-12 schools, Madeline Hunter was often referenced in the 1970’s for the “elements of effective instruction”—a check list of
sorts that included “set, modeling, checking for understanding, etc.—that administrators used to evaluate teachers. In today’s schools, the emphasis on standardized test score results seems to straightjacket many teachers into a very narrow focus of measurable outcomes.

At the postsecondary level, a series of critiques of research universities the Carnegie Commission for the Advancement of Teaching noted the skewing of rewards toward research after World War Two and the entrance of federal funding through grants. The Boyer Report (1990) and two subsequent reports offered arguments for the “scholarship of teaching and learning” as one way to redress this neglect of undergraduate instruction, in particular (Boyer, 1990, Glassick et al., 1997; Kenney, S., 1998). Using case and problem based learning, discovery, inductive and other constructivist approaches as well as cooperative learning would allow instructors to emphasize higher order thinking and creativity. However, simplifying instruction and making it more administratively efficient by packing large numbers of students into lecture halls for “information acquisition sessions, inevitably meant a greater focus on objective information transfer that could be tested through multiple choice and machine scored exams.

Since these Carnegie Reports first surfaced, many states have reduced their funding of public higher education with the predictable pressure by administrators on faculty to increase their pursuit of external funding and publications in “top tier” and “high impact” journals, further decreasing any recognition for what the Boyer Report referred to as the “scholarship of integration.” Accordingly, academic silos have become ever more isolated from the necessary interdisciplinary nature of real problems and issues, the stuff of case study analysis. Because new faculty are typically hired into these academic, disciplinary “silos,” there is very little opportunity or encouragement for researchers to collaborate across these lines.

In the classroom, the study of complex issues also requires interdisciplinary thinking and sophisticated instruction. Whether the topic is sustainability (Timpson, Dunbar, Kimmel, Bruyere, Newman, & Mizia, 2006), diversity (Timpson, Yang, Borrayo, & Canetto, 2005; Timpson, Canetto, Borrayo, & Yang, 2003), or conflict resolution, cooperation, peace and reconciliation (Timpson, Brantmeier, Kees, Cavanagh, McGlynn & Ndura-Ouédraogo, 2009; Timpson, 2002), teachers need access to the range of instructional approaches that are available.

Cognitive development, deeper learning and case study analysis

William Perry’s (1981, 1999) often cited cognitive hierarchy for the cognitive development of college aged students points toward a growing ability to handle complexity and ambiguity as the signature skills of higher order thinking as students move beyond the dichotomous thinking that is too often reinforced by schooling and its preoccupation with more easily testable objective knowledge acquisition. In a parallel fashion, Paul Ramsden (1992) criticized the preoccupation with the “surface level” learning that characterized information acquisition in direct instruction and lecture formats and then made the case for greater attention to the “deeper learning” required for higher order thinking, i.e., application, analysis, synthesis and evaluation.

Based on their work at the Harvard Business School where the case study method has been practiced and refined over many years, Barnes, Christensen, and Hansen (1994) have laid out compelling reasons for this approach to instruction and learning. Offering a tangible expression for Bloom’s (1956) hierarchy in the cognitive domain, case studies offer students opportunities to apply their knowledge with real world examples, to deepen their understanding through analysis, synthesis, and evaluation. Students are challenged to discover their own responses but then check their ideas against what others in class are thinking as well as what ideas are in various published sources. With complex cases, they often also discover a range of opinions and their challenge is also one of evaluating those sources and the lines of reasoning each represents. Here we can also see the expression of Kuhn’s (2012) classic work on paradigms, how ideas are embedded in certain prevailing lines of reasoning.

Working with case studies is also quite stimulating for students and instructors alike. The challenges can be very invigorating, exactly what various developmentalists have long championed. Kohlberg (1963), for example, asked instructors to develop dilemmas that would engage students in deep discussions around moral choices. This kind of intellectual and emotional investment in issues could, he argued, serve as catalysts for moral development. Piaget (1970) used various categorization tasks to assess progress along a continuum of logical reasoning and long argued for teachers to create rich and stimulating environments for students. In the evaluations of problem-based learning, while student performance on standardized exams may not...
be superior to direct instruction, it is very clear that students deeply appreciate the benefits of engagement, discovery, and relevance that are associated with problem- and case-based learning (Timpson & Doe, 2008; Hmelo-Silver, 2004).

In a recent volume, Timpson and Holman (2011) worked with K-12 teachers and college instructors to design a series of cases that drew on various models of communication to integrate issues that touched in diversity, sustainability, peace and reconciliation. Connected by common readings and a unifying format of goals and objectives, questions for discussion and assessment, these cases should prove easily adaptable to various levels of schooling and different disciplines.

Finally, the researchers also focused their attention by using the lens of Critical Multicultural Education (CME), in particular. In one classroom, for example, diversity was addressed in a Foundations of Education course where a CME framework was utilized to examine the “sociopolitical consciousness” of those participating (Ladson-Billings, 2006). Drawing on theorists like theorists such as James Banks (2010) and Sonia Nieto (2010) proved effective in helping us identify the interplay of issues that reflected power, privilege, ethnicity, social class, gender, language, ability, and the like.

Methods

This qualitative analysis of a series of videotaped classroom applications of different case studies involved the creative collaboration of six researchers over many weeks of exploration, discussion, and analyses. Participants were students who attended courses in which their instructors used the case method of instruction. Enrolments in these classes ranged from 18 to 30 students. The classes were selected purposively; three of which were undergraduate classes and two were graduate. These classes were 50, 85 or 180 minutes in length; the total number of hours recorded was 285 minutes. There were three different instructors who facilitated their own class interactions.

The data were collected through video recordings that allowed the researchers to observe and capture the use of case method instruction and gave them the opportunity to re-frame, re-focus, and re-evaluate this instruction through the “analytic gaze” (Heath, Hindmarsh, & Luff, 2010). The intent was to capture these teaching events as they happened, providing opportunities “to record aspects of social activities in real-time: talk, visible conduct, and the use of tools, technologies, objects, and artifacts” (Heath, et al., 2010, p. 5). An advanced graduate student also transcribed these classroom activities for later analysis for themes and interconnections. Another graduate research assistant also took notes for later analysis.

A “hermeneutic video approach” was used to analyze the data in an effort to assess subjects’ perceptions of reality and their interpretations (Knoblauch, Schnettler, Raab, & Soeffner, 2006). The researchers used a two dimensional approach to look for possible themes. The first approach was at a ‘micro-level’ where the data was analyzed fragment by fragment in an attempt to make sense of the actions in the context of the environment and the participants. The second approach required the researchers to interpret the data from the participants’ perspective while asking a range of questions; e.g., What is going on here? Why are the participants behaving this way? And why have they made this choice and not others? In this second approach, the researchers looked at the entire data set holistically in an attempt to analyze what worked and what did not at a deeper level.

After the hermeneutic video approach was completed, the researchers used a thematic analysis to examine commonalities and differences among the relationships (Gibson & Brown, 2009). They searched through the video analyses and looked for emergent common themes in students’ behaviors and interactions as well as in the learning environment as a whole.

In addition, constant data comparative analysis was used to create domains and taxonomies in order to understand these interrelationships better. Triangulation was used to get at multiple perspectives. Each researcher analyzed the videos individually, and then met as a group every two weeks to discuss their findings and further refine their analyses (Glesne, 2006; Merriam, 2002).

Results

In general, participating students reported that their understanding of course content deepened—i.e., that “knowing was not enough”—as they engaged in meaningful cases, explored different positions through role playing, and then analyzed the results. The researchers could see student reactions at the different stages of Bloom’s (1956) hierarchy above knowledge, i.e., evaluation, synthesis, analysis, application and understanding.
In the analysis of written survey results, females reported greater appreciation of the benefits of case study analysis. In an analysis of videotapes of classroom interactions, student comments reflected a positive climate and an active engagement not often found with more traditional lecture approaches, i.e., eagerness by students to ask questions, flexibility in teacher-student interactions, willingness to explore related topics. (See “Classroom Climate” in Timpson & Doe, 2008.)

More specifically, eight themes emerged from these analyses. First, and foremost, was the presence of high levels of engagement of students. It is clear from the videotapes — i.e., interactions, facial expressions, body language, and participation rates — that students are more attentive than they are during explanations, announcements, etc. and that the case study offered them something different. Second, student enthusiasm for participating in these case studies was also high, especially when compared to other, more instructor-directed approaches.

Third, since most of these cases involved some form of role-playing as a mechanism for surfacing a range of opinion and reaction, it was important to assess the willingness of students to accept the characters as defined. In the theater this is referenced as the “suspension of disbelief” that allows audience members to fully engage in a drama and care about the characters on stage or in the film (Timpson & Burgoyne, 2002).

This analysis was also connected to the work of Perry (1981; 1999) whose middle stage of multiplicity describes the cognitive development of college students when they can begin to accept and understand other perspectives, moving past dichotomous thinking about right and wrong, black and white, yes and no. Accordingly, this fourth theme emerged around student ability to handle the complexities and ambiguities that were embedded within case studies that crossed disciplines to connect diversity, sustainability, and peace education.

Again, William Perry’s work became an important theoretical framework for understanding greater student engagement and participation. One instructor admitted to the challenges that she faced when using these role-plays, “I have to admit this was a very big challenge for me in the way we did it because that whole thing of audience ‘front loading’ is actually a huge ethical problem in broadcast journalism. There is a real debate about what is ethical and, if you are doing a news program, how much ‘salting’ in the mind (of the audience) can you do and still have a legitimate program?”

A fifth theme revolved around active and interactive learning. Video and audio analyses showed the various ways in which students interacted with others in roles, discussions, questions, and responses. The work of Piaget, Bruner, Kohlberg, Perry and others speak to the importance of active and interactive learning as catalysts for cognitive development. For example, after discussing a particular controversial issue one instructor brought the students together and asked, “What are some of the emotions you are feeling?” The students responded and an assistant wrote these “feelings” on the board. “Why these emotions?” asked the instructor. Several students responded as the instructor listened. This then evolved into an even deeper discussion where more questions arose and additional reactions were shared.

A sixth theme revolved around the value of a stimulating environment. Video analysis suggested that developmentalists like Piaget and Kohlberg would applaud case studies that provoked rich discussions and interactions in contrast to the relatively passive note-taking that many students experience in high school, college and university classes. Audio analysis, especially during the time for debriefing, revealed much appreciation for the creativity and challenge inherent in these case studies.

A seventh theme reflected the value of creativity. Video and audio analyses showed that from writing, producing, and acting in the various case studies, students had opportunities to exercise their creative talents, boosting their engagement. Students were also more willing to let different ideas incubate while their non-rational abilities often opened up to new insights.

An eighth theme emerged around student empathy, the ability for them to understand and accept the opinions and reactions of others. Here, video analysis revealed that role-playing allowed students to identify with different characters and perspectives, offering them opportunities to actually practice empathy. Audio analysis revealed the range of opinions that the different roles represented, ideas that rarely surface in a more traditional lecture/discussion format. For example, Timpson’s (2002) work on teaching and learning peace describes the skill set needed for students to work through conflicts, tensions, and problems, both in
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their personal lives as well as in the classroom when cooperative projects require effective communication, negotiation, and conflict resolution.

Finally, video and audio analyses pointed to a ninth theme, where a positive classroom climate was evident through high student engagement as well as the laughter and obvious fun that often accompanied the role-playing. Evidence surfaced for a number of climate factors such as: increased trust, high levels of empathy, open accepting communication, increased morale and motivation, and flexibility in how a particular case unfolded. Everyone in class often had a voice in the case as well as during the debriefing period. For example, one instructor told the students, “I understand that this is a hard concept to understand and get your head around.” He then offered a synthesis of the topic, asked more questions and gave more examples. Another instructor was very observant of her students and, at one point of frustration, said “so at least by the nonverbal and side talk conversations (I can see that) this is a weird, awkward question”.

**Discussion**

Each of these nine themes speaks volumes to the complexities of reality and how instruction, in particular, needs to avoid the seductive simplicities of reductionist thinking and embrace the richness of reality. Case studies are designed to call forth this complexity and tap into the richness of what we know about engaging students in critical and creative thinking.

Barrows and Tamblyn (1980) note how professional roles typically defy overly reductionistic reasoning. Instructors, however, can guide students through an exploration of compelling issues, explaining how to access the various sources that are available. In essence, learning can be more about an immersion in an issue and a process for exploration.

What is needed at all levels of schooling, K-12 through postsecondary is to mimic what has happened at various professional schools where case- and problem-based learning are the focus for curriculum design and delivery. We need this kind of unifying field theory for instruction to avoid the overly reductionist tendencies of our current educational paradigm of choice and better capture the rich complexity of the realities in which we live.

**References**


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