CONSIDERATIONS IN THE DESIGN OF VICARIOUS LEARNING ENVIRONMENTS

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ABSTRACT

A majority, if not all, research on experiential learning in the ABSEL literature has focused its efforts on direct experiential learning (learning by doing) or DEL. Questions have since risen as to why vicarious experiential learning (learning by observing) or VEL has not been considered or even investigated as to whether it even takes place. A look at the ABSEL literature tells us that a general failure to include for it into the design of our exercises may be the cause. This article looks at some of the underpinnings and theory of VEL and offers a suggestion on how it can be designed into the experiential exercise. The information contained herein is only the tip of the iceberg on vicarious experiential learning and should serve as a springboard toward future research.

INTRODUCTION

Business simulation and experiential exercises have been used in a wide variety of instances with considerable success (Gaulden, 1988). Experiential learning has been described as "whole person" learning initially addressing the cognitive and affective domains (Rogers, 1969) and later the behavioral dimension was shown to also contribute to whole-person learning (Hoover, 1974).

An experiential learning exercise may be defined as a task or activity involving participants that is designed to generate "live" data and experiences that can be used to teach concepts, ideas, or behavioral insights. It is based on the premise that what the participant discovers for their self has a different meaning than lessons acquired through lecture or discussion modes. Learning resulting from active personal involvement can be superior to passive, traditional means (Warrick, et. al., 1979) as seen in Figure 1.

The whole of the experiential learning experience can be separated into two distinct but highly related areas. These are Direct Experiential Learning (DEL) and Vicarious Experiential Learning (VEL). Defining Direct Experiential Learning has not been so easily accomplished even though it has been described in the literature. Among these descriptions are:

- High intensity learning, where an individual is active in the learning process (Hoover, 1974).
- An active process ascribed to Kolb's four-phase learning model shown in Figure 2 (Kolb, 1971).
- "Learning by doing", where a personally responsible participant cognitively, affectively, and behaviorally processes knowledge, skills, and/or attributes in a learning situation characterized by a high level of active involvement (Hoover, 1974).
- Inferred from the description of vicarious experiential learning to be: behavior which is substantially modified as a function of affecting others' behavior and its consequences on them".

THEORETICAL UNDERPINNINGS OF VICARIOUS LEARNING

Vicarious experiential learning is described as that "behavior of observance that can be substantially modified as a function of witnessing other people's behavior and its consequences (Bandura, 1965). It has also been described as; observational learning consisting of four processes: Attention: modeled events and observer characteristics; Retention: symbolic coding and cognitive organization; Motor reproduction: physical capabilities self-observation; and, Motivation: external, vicarious and self reinforcement

Continuum of Effective Learning Modes
Figure 1

(Bandura, 1986) (http://tip.psychology.org/bandura.html)
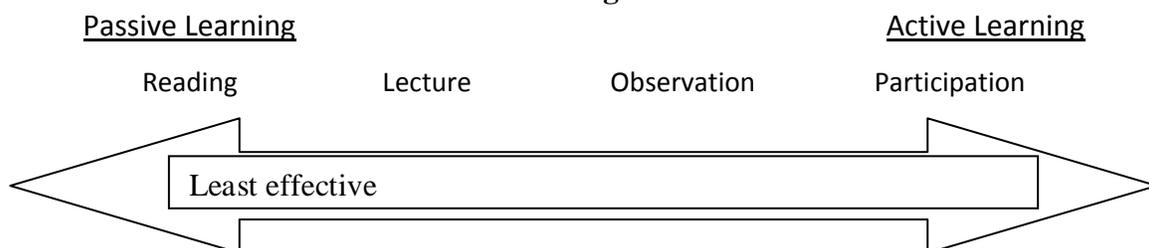
In both of these definitions an important issue that must or should be addressed is what is meant by the word "active"? Can a distinction be made relative to DEL and VEL? To do so, to separate the physical activity from the mental activity, will help us to understand; at least in some respect that we have not considered VEL in our research and writings. Why for the most part, it is absent from the (our) literature?

In designing experiential exercises the main focus is usually on the sort of skills we are either trying to introduce to the student or trying to enhance skills already present. The design phase of experiential learning or "setting the stage" includes the following specification of learning objectives; the production or selection of activities for participants; the identification of factors affecting student learning and the creation of a scheme for implementation (Wolfe, et.al., 1975). Kolb (1971), in his writing states that the cognitive activities and skills required for each phase of the process are quite different. This, for the most part, is true, because as we pass from stage to stage, the application of the skill will change slightly. It is in combination within the design of the exercise whether we can indeed measure for and if vicarious learning has occurred.

It is important then to visit the types of learning styles that exist on how individuals learn. They are briefly:

- Divergent: Concrete Experience and Reflective Observation
- Assimilation: Abstract Conceptualization and Reflective Observation
- Convergent: Abstract Conceptualization and Active

Experimentation (practical application of ideas)
- Accommodation: Concrete Experience and Action Experimentation (Kolb, 1971)

If we can discover how people approach the learning process, we may be able to distinguish between approaches or styles (DEL vs VEL style/approach) which are successful and those which are unsuccessful… and in specific environments (Fritzsche, 1977). Fritzsche also goes on to say that "no work has apparently been done relating individual learning skills to successes in an experiential learning environment." For the purpose of this paper we are defining these approaches or styles as either direct experiential learning or vicarious experiential learning.

In looking/considering these would require some sort of two-pronged attack to see if vicarious learning did occur vicariously. We need also to be aware that some people learn better predominately one way over another. In the case of DEL (learning by doing) vs. VEL (learning by observing) it would suggest that the initial starting point in Kolb's model would shift two phases to the right in cases of where vicarious learning occurred (abstractive conceptualization) as the active participation required would be more cognitive or thinking rather than physical (doing) or the concrete experience (Figure 2).

One could stretch to say that observing is in some sense concrete in that the person, to some degree, is "actively" involved in the experience. If experiential learning practitioners are to maximize whole-person learning outcomes; they must understand the tools, or combination of tools available as specific approaches. From a whole-person perspective, it makes sense to view the cognitive, affective,

Comparison of Kolb's Learning Model to Vicarious Learning Model
Figure 2

287   Developments in Business Simulations and Experiential Learning, Volume 37, 2010
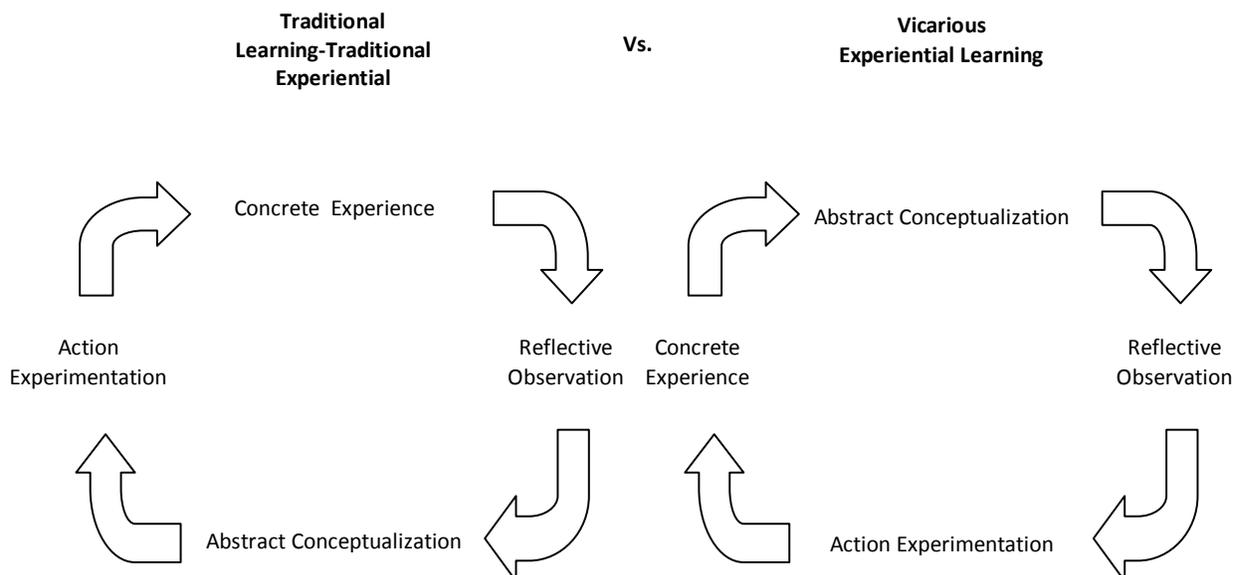
and behavioral elements as occurring simultaneously rather than sequentially (Hoover, 1974).

Returning to the concept of whole person learning we now must also consider the aspects of the direct learner characteristics/attributes of the person in addition to those vicarious learner attributes of the individual, if we in fact want to maximize the learning experience. Therefore we must consider the context in which these dimensions reside, not just the dimensions themselves.

Where DEL can be viewed or experienced at one time as in the person experiencing the experience, with vicarious learning these dimensions are split into two parts. The first being the cognitive and affective where the experience is observed and the second, being the behavioral, where the experience is put into practice. It would be correct to infer that the behavioral dimension is the only dimension to be common between both DEL and VEL. Hoover (1974) wrote that in the highest intensity learning experience the individual functions at a high level of arousal and activity on all dimensions and that lower intensity learning can be conceptualized as those situations in which the whole learning person is not involved, or is involved at an insufficient level of arousal. There are two issues here that present themselves; the first being what is meant by an "insufficient level of arousal". The second issue here is how one measures the mental doing, the "thinking" over the physical doing, i.e. the engagement of the experience. It could be hypothesized that a high or sufficient level of arousal can exist vicariously if we know how to measure it. Furthermore, what is it that we are trying to arouse, one's level of understanding.

In order to be able to measure something we need to be able to design into the exercise some way which allows us to conduct the measure. There are two major problems that may have impeded (our) work in this area: lack of adequate research design and lack of a good framework for conceptualizing the learning process or to guide investigation of learning (Butler, et.al., 1985). Little has emerged from the effort that establishes what learning outcomes occur with experiential exercises and under what conditions (Butler, 1985).

Part of the inadequacy of our design of experiential learning exercises stems from the question of, "why do we evaluate experiential learning efforts?" Is it for own benefit such as conducting evaluation efforts as part of a promotion or the need to justify the use of material to other people (Schreier, 1977). Furthermore, Schreier provides additional insight when he suggests that we look at what is being evaluated and what we are trying to accomplish by these evaluations. He states that this raises a serious question (issue) – "It seems to me that we are working with a much more important criteria which might generally be labeled knowledge of an area, for example, management, or an ability to perform, at some later date, on the job." So then it is important that experiential learning be able to tell us the process-results of our efforts as well as the end-results of those efforts.

The ability to develop and design experiential exercises lies in the consideration of certain experientials; psychological concepts and sociological concepts. Examples of psychological concepts would be in such areas as needs, motivation, learning, etc., with the realization that they provide a benefit to their understanding of their own make-up which will provide a relatively permanent frame of reference for these concepts. Likewise from a sociological standpoint, concepts such as cultural influence, social groupings, and reference group influence will aid in their own environments and behavior. These concepts offer at least three alternative modes for use: participation in a group exercise, observation of group behavior, or reflection on their own history of group participation, interaction, and influence (Gaulden, 1979).

DESIGNING FOR VICARIOUS LEARNING

There are several major reasons why we have not studied vicarious learning or have neglected to do so. In addition to "possibly" not fully understanding what can constitute VEL, we have the following:
1. A general failure in considering the discontinuity and reconnection that is in any learning experience especially as it relates to VEL,
2. A general failure to ask the deep-level-reasoning questions on post-testing or post-experience that is required for vicarious learning to exist.
3. A general failure to design within our exercises a means to facilitate the existence of vicarious learning and a means to evaluate it.

DISCONTINUITY AND RECONNECTION

The purpose of the vicarious learning process is to bring to the surface a participant's personal practical experience repertoire and make it available for further reflection. The experience that emerges consists of a particular experience indistinguishable from the resonance it evokes on the person's personal practical knowledge, with resonance giving clues to the content of the vicarious experience and in material for reflection (Conle, 2001). Resonance is defined as two different clusters of experiences being related to one another (e.g. "that reminds me") (Conle, et.al., 2002).

In any learning situation there will be a general disconnection of the participant (non-participant) and the exercise itself. At the same time, there is the belief that there are connections between vicarious experiences and practice (Conle, 2002). The connection between vicarious experience and practical knowledge is very likely not restricted (to teacher education), but links to a larger social phenomenon (Conle, 2002).

Students upon entering an (experiential) learning situation have with them what is defined as personal practical knowledge. This knowledge is derived from both experiences, and from a personal participation of the knower in all acts of understanding (Polayni, 1958, p.iii). The

action(s) one takes in experiential exercises is derived from an awareness of the powerful influence of post and present encounters on our knowledge and our actions (Conle, 2002). These past actions will shape or affect the pool of personal practical knowledge that will be available in the future for both action and reflection. It should also be recognized that students have a very large capital of an exceedingly practical sort of their own experience (Dewey, 1964). It is this capital that they bring to the experiential experience whether they participate through DEL or VEL. Furthermore, the power of the work (experience) suddenly tears the (reader) out of the continuity of their life, but nevertheless, simultaneously reconnects them with the whole of their life (Conle, 1986). So as you can see, discontinuity and reconnection is key in any learning experience (Gallagher, 1992).

This reconnection is important in that it will provide or should provide the basis for asking the deep-level questions and would require the VEL participant to experience a re-going back into the past for learning, something that will trigger a memory (Conle, 2002), and they are a mode of understanding and learning, that once they take place, cannot be reversed, separated, or kept always from one's knowledge or life (Gadamer, 1986). Earlier experiences are linked together and assigned in relation to practical knowledge having the chance that it will enhance vicarious learning.

Using Kolb's model as a basis, we can see where in comparing Figure 2, the vicarious model differs slightly. Given that the participant has a slightly passive/active role, they start mainly with an

1. Abstract Reasoning: being able to picture in front of them what and the why of an experience that might take place. Here is where the discontinuity and

disconnection of the experience take place.
2. Reflective Observation: the participant begins to draw connections between what they have seen and their capital of personal practical knowledge and experiences and that which they have observed.
3. Action Experimentation: the participant takes that which he knows, ("personal practical knowledge) and continues that with what they have observed and then begins to see how they can use this experiential-wise, a reconnection begins here.
4. Concrete Experience: it is here where the re-connection solidifies itself and the participant has had the full experiential experience. Also for where this new knowledge forms the basis of the abstract conceptualization for the next vicarious round.

The model in Figure 3 illustrates the integration of both the traditional and vicarious learning models. Here we can see where the learning process will move to one which begins with Abstract Conceptualization. The concrete Experience comes into play only when the learner begins to use their store of knowledge by putting it into practice. The addition of a second instance of Reflective Observation can be the link between VEL and DEL. The shaded arrow signifies the move from VEL to DEL.

DEEP-LEVEL REASONING

In order for the objectives from experiential learning exercises to be achieved much responsibility rests with the debriefing phase of the exercise (Warrick, et.al 1979). In getting to whether learning has taken place, questions must be asked of the participants. According to Wittrock's generative theory of learning, students learn better when they engage in appropriate cognitive processing during

Integrated Learning Model
Figure 3
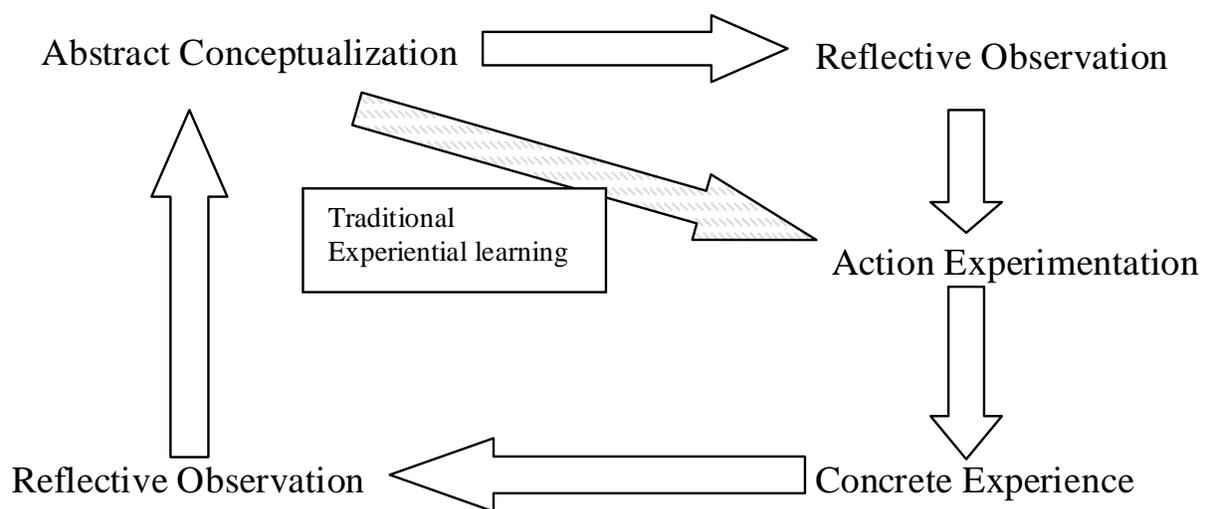
learning. In Richard E. Mayer's work he identified three cognitive processes required for meaningful problem-solving, which involves paying attention to relevant incoming information; organizing in building coherent cognitive representation; and integrating, connecting new knowledge with existing knowledge (Campbell and Mayer, 2009). As you can see these processes are closely related to those required for the deep-level questioning required for facilitating vicarious learning.

It is and has been recognized that questioning has great value in that generative theory predicts that students in the questioning group will perform better on subsequent tests than students in the control group (Campbell and Mayer, 2009). Therefore it is important that the right questions (deep-level reasoning) be designed into the de-briefing (in vicarious learning, self-debriefing) so that a re-connection can be facilitated between that which is observed and that which already exists in the form of personal-practical knowledge/capital after the completion of the exercise. A deep-level-reasoning question is one that leads to discrepancy detection (discontinuity) and reconstruction (re-connection) of the current mental model (Craig, et.al, 2006).

Vicarious learning environments are those in which the learners see or hear content for which they are not the addressees and have no way of physically interacting with the source of the content that they are attempting to master (Criag, et.al. 2006), that is, they are strictly observers and nothing more. Asking good questions leads to improved comprehension, learning and memory of the materials. The better he question, the better the comprehension because it gets the person thinking more, and then they are better able to see the existing relationship and to form new ones. Craig, (2006), described two different conditions in the transfer task (where one presents the topic and allow for questions until topic is satisfied): dialogue-conditions where information delivery was followed by a series of conversational exchanges; and a monologue-like condition where the receiver asked one broad question meant to provide context, with the sender answering in a manner that presented all information on that topic. It was found that those in the dialogue condition generated a significantly greater proportion of questions that involved deep-level reasoning from those in the monologue type.

The final results were that the vicarious learning procedures used in acquisition in the dialogue condition were quite effective in inducing learners to take more conversational turns, ask more deep-level-reasoning questions, and learn (i.e. recall) more content in the transfer task (Craig, 1985).

DESIGN TO FACILITATE VICARIOUS LEARNING

There are two factors in particular which have seemed to impact the development of the study of vicarious learning; inadequate to research design and a lack of a paradigm to guide investigation in this area. It has been my opinion that we should design the exercises so that we can measure learning vicariously since so much emphasis is already put into design and measuring "learning by doing", that not much, if any, has been put into "learning by observing".

Control groups in standard experiential exercises have be of the "no treatment" variety in that they were not subjected to the "treatment". In vicarious learning environments, the "treatment" now becomes the "physical doing" rather than the "observational doing". This will have a greater affect on both the cognitive (dealing with recall and recognition of knowledge) and the affective domains (the degree to which learners are sensitized to learning) (Butler, 1985).

The behavioral domain which deals with the application of the learned knowledge is where you actually can determine if vicarious learning has occurred. In designing our exercises, there should be instances for the control group to observe the activity and then to determine if learning has occurred, perform the activity. This presents two opportunities to observe the instances of vicarious learning: the first given the existence of deep-level-reasoning questions in either the monologue-setting or the dialogue-setting. By doing this would give strength to the finding that deep-level-reasoning questions improve vicarious learning (Craig, et.al., 2006). Additionally, we can also forego the questioning and proceed to the application of the newly acquired knowledge, comparing the results with the questioning group.

By doing it in this manner would necessitate the splitting of the proposed vicarious learning cycle into two parts, one that would encompass the cognitive and affective aspects of Abstract Conceptualization and Reflective Observation with the cognitive, affective, and behavioral aspects of Action Experimentation and Concrete Experience.

Level of Expertise
Exhibit 1

1. How long have you been playing Connect Four?
2. At what skill level would you describe yourself?
   a. Novice
   b. Intermediate
   c. Advanced
3. What is your familiarity level with the game?
   a. Not at all
   b. Somewhat
   c. Very familiar

A PROPOSED EXPERIENTIAL LEARNING DESIGN

The vehicle for this experiential learning exercise is going to be using the vertical checkers game, "Connect Four". The environment will be constructed in the following manner. There will be two groups: control and experiential. The members of each group will be determined by the results of a questionnaire (Exhibit 1) determining the skill level of the participant. The groups will be divided as equally as possible to ensure the same number of observers as players. A Round-Robin tournament will be played with the control group being the ones engaged in playing and the treatment group, the ones engaged in observing. The observers will be assigned a particular board at which to observe play.

There are, therefore, two major parts to this exercise. The first is when the treatment group will be assessing the play of the control group. The second part of this exercise consists of those who were first observers and are now engaged in playing and putting into practice that what they observed.

Those actively playing the game will be moving from board to board as subsequent rounds are played. Those observing will makes notes on the type of style and manner

Vicarious Learning – Debriefing Questions
Exhibit 2

To be completed prior to observation:

1. What types of strategies or ways of playing are you currently familiar with when playing Connect Four?
2. Of these strategies, which one(s) is your favorite?

To be completed after observation:

1. What strategies did you observe that you were already familiar with?
2. What strategies did you observe that you were not already familiar with?
3. In what context did you observe them?
   a. In what phase of the game?
4. Did any of these strategies appeal to you?
   a. If so, which one(s)?
   b. Why?
5. How many times did you observe the same strategy being played?

To be completed after your play is completed:

1. When playing the game, what type of strategies did you employ?
   a. Which of these were already familiar to you?
   b. Did you use them when you played?
   c. What was the overall result?
2. Which of these strategies did you learn while observing play?
   a. Did you use them?
   b. What was the overall result
   c. Which were the most successful?
3. How many times did you use the same strategy?
4. Of your observed strategies, which ones was your favorite?
   a. Why?
5. Looking at all the strategies you have been exposed to in this exercise, which are now your favorites and in what context would you use them?

of play at their respective boards. When the round of play for the control group has ended, then round-robin play will begin for those in the treatment group. This will enable those in the treatment group to use the new knowledge about the game and manner of play (if they so desire) in their games. Play will be observed and won-loss record recorded for each person in either the control and treatment groups.

The basis for this line of investigation stems from research performed by Terlaak and Gong (2008) in which they state, via Haunschild and Miner (1997), Levinthal and March (1997) and March (1991), that vicarious learning – that is, learning from the actions of other firms – allows organizations to replicate or draw insights about valuable activities without carrying the full cost of exploration and experimentation.

In this research, they propose a model that explicates how observers may learn vicariously whether to adopt a practice whose value varies across firms. In their case, firms and in this case, individuals, in both cases they will either adopt strategies quicker or not at all based on how established they are in their context (established firms/knowledgeable and experienced player vs. startups/novice players). In other words, younger more inexperienced players are more willing to adopt vicariously-learned strategies only if they see value in it, over more established/knowledgeable-experienced firms/individuals.

It is hoped that the won-loss records for the treatment group will be at least equal to or succeed those for the control group, individually and those as a group. Questionnaires will be administered to the treatment group to help determine whether vicarious learning has taken place and to what extent (Exhibit 2).

CONCLUSION

Vicarious learning has been demonstrated to contribute positively to the overall experiential learning experience. However in order for this to occur we must develop deep-level reasoning questions to measure this. In order to demonstrate the true whole-person learning we must design our experiential exercise to take into consideration and plan for this type of learning, non-vicariously.

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