

Pattern Language and the Future of Education in Light of Constructivist Learning Theories, Part 3: Consideration with John Dewey's Concept of Pragmatism

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In this paper, we consider how pattern languages can contribute to the formation of cognition and knowledge and the learning of experiential knowledge using Constructivist learning theories. According to Constructivism, people cannot simply take in knowledge from the external world; Rather, it is constructed through their experiences. In our research, we aim to make clear, in the perspective of Constructivism, what pattern language is, how it can function and be learned, and how it can support various practices. This paper is the third in a series of papers considering pattern languages through the perspective of Constructivism. With past papers that made use of the theories of Jean Piaget (Iba and Munakata 2019), Lev Vygotsky (Iba and Burgoyne, 2019) and Seymour Papert (Iba and Iwata, 2019), this paper will discuss the theories of John Dewey in relation to Pattern Language.

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1. INTRODUCTION

Pattern Language is existing experiences and knowledge of doing/being in a certain field put into words to support others and help them practice these ways by themselves. In this paper, we will go on to discuss the pattern language's role and functions in learning from the perspective of John Dewey's concept of Pragmatism. This is the third in a series of papers that discusses the functions of pattern languages using Constructivist theories of cognition and learning (Iba and Munakata, 2019; Iba and Burgoyne, 2019; Iba and Iwata, 2019).

John Dewey (1859~1952) was an American philosopher and pedagogist. While it cannot be denied that Dewey's ideas are characterized by the empirical concept of Pragmatism, his thoughts are also recognized as holding some aspects of Constructivism. His ideas overlap with Piaget's in that they both say that living beings interact with their environment and construct knowledge through the experiences of these interactions. His ideas also overlap with those of Vygotsky's, as they both emphasize interactions with others. Dewey's thoughts have an emphasis on experiences, and he especially considers them in terms of tools, inquiries, and society.

In the following, we will provide an overview of Dewey's various theories and present how pattern languages can be understood from the views of those theories. We will also discuss within Dewey's theories, links to the Creative Society (Iba, 2013), which can be realized through the support of Pattern Languages.

2. DEWEY'S THEORIES

2.1 "The Principle of Continuity" and "Reconstruction of Experience"

Dewey perceived living creatures as beings that, unlike inanimate objects, produce energy for themselves and use it for their preservation and growth. With this they exist while constantly renewing themselves. Dewey states that "life is a self-renewing process through action upon the environment" (Dewey, 1916, p.4). Dewey believed humans to be beings that not only renew themselves organically, but continuously renew their experiences within society.

Dewey saw *experiences* as one's interaction with their environment, and believed *experiences* included both the action and its consequences. He referred to this as the "Principle of Interaction" which, put simply, means that experiences are what is born through the involvement with things and others in one's environment.

Dewey gives attention to "the fact that all human experience is ultimately social" (Dewey, 1938a, p.38) and states that "we live from birth to death in a world of persons and things which in large measure is what it is because of what has been done and transmitted from previous human activities" (Dewey, 1938a, p.39). Experiences are not simply brought about within a vacuum. Rather, the source of their occurrence comes from outside oneself. Dewey explains this idea with the following example.

“No one would question that a child in a slum tenement has a different experience from that of a child in a cultured home; that the country lad has a different kind of experience from the city boy, or a boy on the seashore one different from the lad who is brought up on inland prairies.” (Dewey, 1938a,p.40)

This point of Dewey’s perspective overlaps with Vygotsky’s Cultural-Historical Theory of Development (Iba and Burgoyne, 2019). Any experience is composed of elements of one’s environment, their inner thoughts and feelings, and their relationships with others. The *context*, however, can also include the surrounding nature, buildings, facilities, the person one is talking to as well as the subject being talked about, what toys one is playing with, what books one is reading, equipment and materials being used, etc. The parts of the *context* then interact with requirements, aspirations, goals and abilities to create *experiences*.

Although Dewey states that “because every experience is constituted by interaction between “subject” and “object,” between a self and its world, it is not itself either merely physical nor merely mental, no matter how much one factor or the other predominates,” (Dewey, 1934, p.256) the “subject” and “object” are not just interacting. Rather, these are part of each other. Instead of understanding the “subject” and “object,” what action one takes and the outer influences that caused or are affected by these actions, as two separate and interacting things, Dewey understand the “subject” and “object” to be one thing. This means that there is “no division between act and material, subject and object, but [the situation] contains them both in an unanalyzed totality.” (Dewey, 1925a, p.8). Dewey states that rather than saying “I experience” (Dewey, 1925a, p.232), it is more accurate to say that “It experiences or is experienced” (Dewey, 1925a, p.232).

Dewey says that the function of intelligence is to grasp the patterns and structures from this combined state and clarify the relationship between actions and consequences.

“An experience has pattern and structure, because it is not just doing and undergoing in alternation, but consists of them in relationship. To put one’s hand in the fire that consumes it is not necessarily to have an experience. The action and its consequence must be joined in perception. This relationship is what gives meaning; to grasp it is the objective of all intelligence.” (Dewey, 1934, p.46)

Along with this, Dewey believed that education is a “reconstruction or reorganization of experience which adds to the meaning of experience, and which increase ability to direct the course of subsequent experience” (Dewey, 1916, p.84).

“I believe, finally, that education must be conceived in a continuing reconstruction of experience.” (Dewey, 1897, p.12)

In this quote, “reconstruction or reorganization of experience,” involves two elements: “the increment of meaning” (Dewey, 1916, p.84) and “an added power of subsequent direction or control” (Dewey, 1916, p.84).

Education makes people perceive and notice how their activities are related to other activities, and how these activities interact. According to Dewey, this is the “the increment of meaning” of experience.

Also, if you become aware of *what you are doing* and *what you are trying to do* and work on the results, you will become able to expect what is to come, avoid undesirable results and ready yourself to achieve better results. In Dewey’s words, this means that there is “an added power of subsequent direction or control” (Dewey, 1916, p.84). Dewey thought that such a reconstitution of experience in two senses was the essence of education.

Additionally, Dewey stated that there are two aspects to the *quality of an experience*. One of these is “an immediate aspect of agreeableness or disagreeableness” (Dewey, 1938a, p.27), while the other is “its influence upon later experiences” (Dewey, 1938a, p.27). When we say the *quality of an experience*, we usually imagine the former. In order to understand what the latter quality means, it is necessary to know the principle of continuity of experience that Dewey proposes.

Dewey noted that an *experience* is not an isolated event, but that there is a continuity to it in which past experiences influence the quality of a present experience, and the present experience influences the quality of future experiences.

“Wholly independent of desire or intent, every experience lives on in further experiences.” (Dewey, 1938a, p.27)

“there is some kind of continuity in any case since every experience affects for better or worse the attitudes which help decide the quality of further experiences, by setting up certain preference and aversion, and making it easier or harder to act for this or that end. Moreover, every experience influences in some degree the objective conditions under which further experiences are had.” (Dewey, 1938a, p.37)

Therefore, education based on experience means “to select the kind of present experiences that live fruitfully and creatively in subsequent experiences” (Dewey, 1938a, p.28). Thus, according to the principle of “continuity of experience”, the role of educators should be to discover and differentiate between what experiences students *will* have and what experiences students *should* have and find out where their present experiences lie in relation.

“It is his business to arrange for the kind of experiences which, while they do not repel the student, but rather engage his activities are, nevertheless, more than immediately enjoyable since they promote having desirable future experiences.” (Dewey, 1938a, p.27)

“It is then the business of the educator to see in what direction an experience is heading. ... Failure to take the moving force of an experience into account so as to judge and direct it on the ground of what it is moving into means disloyalty to the principle of experience itself.” (Dewey, 1938a, p.38)

Dewey states that “It is to emphasize the fact, first, that young people in traditional schools do have experiences; and, secondly, that the trouble is not the absence of experiences, but their defective and wrong character --- wrong and defective from the standpoint of connection with further experience” (Dewey, 1938a, p.27). This connects with the following quote in which Dewey states:

“The educator more than the member of any other profession is concerned to have a long look ahead.” (Dewey, 1938a, p.75)

Here, I would like to highlight again that Dewey emphasizes not the accumulation of knowledge for the future, but experiences that leads to future experiences. Dewey is critical of sacrificing current experiences for the future. Present experiences are extremely significant due to their connection to future experiences. Regarding the assumption of most traditional education that “by acquiring certain skills and by learning certain subjects which would be needed later (perhaps in college or perhaps in adult life) pupils are as a matter of course made ready for the needs and circumstances of the future.” (Dewey, 1938a, p.47), Dewey states the following.

“But it is a mistake to suppose that the mere acquisition of certain amount of arithmetic, geography, history, etc., which is taught and studied because it may be useful at some time in the future, has this effect, and it is a mistake to suppose that acquisition of skills in reading and figuring will automatically constitute preparation for their right and effective use under conditions very unlike those in which they were acquired.” (Dewey, 1938a, p.47)

“I believe that much of present education fails because it neglects this fundamental principle of the school as a form of community life. It conceives the school as a place where certain information is to be given, where certain lessons are to be learned, or where certain habits are to be formed. The value of these is conceived as lying largely in the remote future; the child must do these things for the sake of something else he is to do; they are mere preparations. As a result they do not become a part of the life experience of the child and so are not truly educative.” (Dewey, 1897, p.6-7)

Dewey stressed that schools should be a place where spending time is not just “mere preparation” but rather “worth living for their own sake” (Dewey, 1897, p. 5). “Education, therefore, is a process of living and not a preparation for the future” (Dewey, 1897, p. 5), and school must be seen as “life as real and vital to the child as that which he carries on in the home, in the neighborhood, or on the playground.” (Dewey, 1897, p. 5). Dewey states that “we always live at the time we live and not at some other time, and only by extracting at each present time the full meaning of each present experience are we prepared for doing the same thing in the future.” (Dewey, 1938a, p.49) This is not “mere preparation” for the future at the expense of the present. In order to live creatively in the future, one must live creatively in the present. This is the implication of the principle of “continuity of experience” in education.

I would like to emphasize again that “continuity of experience” is not about simply repeating the same experience. Dewey stated that “we live not in a settled and finished world, but in one which is going on, and where our main task is prospective, and where retrospect --- and all knowledge as distinct from thought is retrospect --- is of value in the solidity, security, and fertility it affords our dealings with the future” (Dewey, 1916, p.163). Continuous learning is significant because the world continues to change and so the future is uncertain. Therefore, he said that the most important thing is the formation of an attitude towards continuous learning.

“The most important attitude that can be formed is that of desire to go on learning. If impetus in this direction is weakened instead of being intensified, something much more than mere lack of preparation takes place. The pupil is actually robbed of native capacities which otherwise would enable him to cope with the circumstances that he meets in the course of his life.” (Dewey, 1938a, p.48)

“What avail is it to win prescribed amounts of information about geography and history, to win ability to read and write, if in the process the individual loses his own soul: loses his appreciation of things worth while, of the values to which these things are relative; if he loses desire to apply what he has learned and, above all, loses the ability to extract meaning from his future experiences as they occur?” (Dewey, 1938a, p.49)

Is our current education capable of forming an attitude of desire to go on learning? Is it providing experiences in the present that lead to future experiences? This is a central question that we should all be constantly asking. It should be noted that the idea that “every experience is a moving force. Its value can be judged only on the ground of what it moves toward and into,” (Dewey, 1938, p.38), stated by the principle of Continuity of Experiences, is a very Pragmatic idea.

Pragmatism, Dewey’s philosophical stance, is characterized by the idea that the value of something is not determined by itself, but by the effect it brings. In this view, the value of experiences should be determined by what effect was brought upon by the experience. Pragmatism is a philosophical position created by Charles Sanders Peirce, and became widely known by William James. Dewey also regards his philosophical position as Pragmatism and says the following about it:

“It does not insist upon antecedent phenomena but upon consequent phenomena; not upon the precedents but upon the possibilities of action, and this change in point of view is almost revolutionary in its consequences.” (Dewey, 1925b, p.462)

Current experiences affect future experiences. Present experiences make subsequent actions either easier or more difficult, and changes the condition of future experiences. These two affects are the aspects of Dewey’s “quality of experience” ----- “an immediate aspect of agreeableness or disagreeableness” (Dewey, 1938a, p.27) and “its influence upon later experiences.” (Dewey, 1938a, p. 27)

2.2 “School as a Community”

Two principles lead to Dewey’s view of “school as a community”: the principle of interaction of experience and the principle of continuity of experience. Dewey emphasized that schools are small communities. In other words, schools should be a place where you can experience society as a community. It is often said that

education is socialization, but for Dewey, schools are already a society and community. Thus, Dewey argues as follows.

“In the first place, the school must itself be a community life in all which that implies.” (Dewey, 1916, p.377)

This means looking at school as a "community" rather than just as a "collection" of students. People do not become a community on their own. They become communities only when they have a collaborative purpose and coordinate their actions accordingly.

Dewey states that “the present school cannot organize itself as a natural social unit is because just this element of common and productive activity is absent.” (Dewey, 1900, p.14) He criticized that they could not be organized as a unit. Dewey believed that the "old individualism" deeply ingrained throughout society was a significant problem, but believed “there is no defect in traditional education greater than its failure to secure the active co-operation of the pupil in construction of the purposes involved in his studying,” (Dewey, 1938,p.67) and considered this to be the “Biggest Flaw. ”He saw classrooms where desks and chairs were neatly arranged as being “for dealing with children en masse, as an aggregate of units; involving, again, that they be treated passively.” (Dewey, 1900, p.32)

“The mere absorbing of facts and truths is so exclusively individual an affair that it tends very naturally to pass into selfishness. ... Indeed, almost the only measure for success is a competitive one, in the bad sense of that term --- a comparison of results in the recitation or in the examination to see which child has succeeded in getting ahead of others in storing up, in accumulating, the maximum of information. So thoroughly is this the prevailing atmosphere that for one child to help another in his task has become a school crime. Where the school work consists in simply learning lessons, mutual assistance, instead of being the most natural form of co-operation and association, becomes a clandestine effort to relieve one’s neighbor of his proper duties.” (Dewey, 1900, p.15-16)

In such a situation, however, he believed that the situation would be different in schools centered on active work.

“Helping others, instead of being a form of charity which impoverishes the recipient, is simply and aid in setting free the powers and furthering the impulse of the one helped. ... So far emulation enters in, it is in the comparison of individuals, not with regard to the quantity of information personally absorbed, but with reference to the quality of work done --- the genuine community standard of value.” (Dewey, 1900, p.16)

Just as Vygotsky criticizes traditional evaluation methods that only test what a child can do alone, and emphasizes assistance and collaboration in the most immediate areas of development, Dewey also believes that the fundamentally individualist nature of schools is a problem, and focuses on the importance of helping one another and working together. This leads to Dewey's view that the experience of school as a "community" is necessary for a democratic society.

“To do this means to make each one of our schools an embryonic community life, active with types of occupations that reflect the life of the larger society and permeated throughout with the spirit of art, history, and science.” (Dewey, 1900, p.29)

In this way, Dewey sees life in school as being a part of a “community.”

“In final account, then, not only does social life demand teaching and learning for its own permanence, but the very process of living together educates. It enlarges and enlightens experience; it stimulates and enriches imagination; it creates responsibility for accuracy and vividness of statement and thought.” (Dewey, 1916, p.9)

In such a School as a Community, "the teacher is not in the school to impose certain ideas or to form certain habits in the child, but is there as a member of the community to select the influences which shall affect the child and to assist him in properly responding to these influences." (Dewey, 1897, p.7) Dewey does not limit learning to something that happens in school, but also talks about ideal learning at home.

"There are certain points of interest and value to him in the conversation carried on: statements are made, inquiries arise, topics are discussed, and the child continually learns. He states his experiences; his misconceptions are corrected." (Dewey, 1900, p.35)

He continues on about not only communication, but participation in work.

"Again the child participates in the household occupations, and thereby gets habits of industry, order, and regard for the rights and ideas of others, and the fundamental habit of subordinating his activities to the general interest of the household. Participation in these household tasks becomes an opportunity for gaining knowledge." (Dewey, 1900, p.35)

The following quote is something that becomes more and more important in the age of a Creative Society.

"The ideal home would naturally have a workshop where the child could work out his constructive instincts. It would have a miniature laboratory in which his inquiries could be directed. The life of the child would extend out of doors to the garden, surrounding fields, and forests. He would have his excursions, his walks and talks, in which the larger world out of doors would open to him." (Dewey, 1900, p.35)

What is said here may not always be possible in the current Japanese living environment, but with these ideas and point of views, it is important to build these sort of spaces and opportunities at home. Dewey thought that experiences in close communities such as homes and schools would form the basis of a democratic society. At the beginning of the essay "My Pedagogic Creed," Dewey says:

"I BELIEVE that all education proceeds by the participation of the individual in the social consciousness of the race. This process begin unconsciously almost at birth, and is continually shaping the individuals powers, saturating his consciousness, forming his habits, training his idea, and arousing his feelings and emotions. Through this unconscious education the individual gradually comes to share in the intellectual and moral resources which humanity has succeeded in getting together. He becomes an inheritor of the funded capital of civilization." (Dewey, 1897, p.1)

Dewey considered it urgent to overcome the ill effects of "old individualism" and "the Great Society" where alienated human relations dominate, and to build a social community in which one-on-one human relations permeate.

"Democracy as a way of life is controlled by personal faith in personal day-by-day working together with others.... Democracy is the belief that even when needs and ends or consequences are different from each individual, the habit of amicable cooperation --- which may include, as in sport, rivalry and competition --- is itself a priceless addition to life." (Dewey, 1939a, p.228)

For Dewey, theories of education are closely linked to social philosophy. This idea is discussed particularly in the book "Democracy and Education". In regards to Democracy, Dewey states that it "is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience" (Dewey, 1916, p.94). Additionally, "an undesirable society, in other words, is one which internally and externally sets up barriers to free intercourse and communication of experience." (Dewey, 1916, p.94) On the other hand, "a society which makes provision for participation in its good of all its members on equal terms and which secures flexible readjustment of its institutions through interaction of the different forms of associated life is in so far democratic" (Dewey, 1916, p.94). Here, individual freedom and diversity are respected, which leads to the growth of society.

Dewey states that “since it is one that can have no end till experience itself comes to an end, the task of democracy is forever that of creation of a freer and more humane experience in which all share and to which all contribute” (Dewey, 1939a, p.230). Dewey advocated a “creative democracy” that realizes the creation of shared experiences.

Dewey believed that dialogues, debates, and other so called “Democratic” methods are significant for a democracy. He also believed that a “Scientific Attitude”, or an attitude of constantly improving knowledge through experiments and sharing this knowledge through communication, is significant. He saw the necessary “Scientific Attitude” as a “willingness to hold belief in suspense, ability to doubt until evidence is obtained; willingness to go where evidence points instead of putting first a personally preferred conclusion; ability to hold ideas in solution and use them a hypotheses to be tested instead of as dogmas to be asserted; and (possibly the most distinctive of all) enjoyment of new fields for inquiry and of new problems.” (Dewey, 1939b, p.112) Such an attitude leads to the idea of “inquiry” which will be discussed in the following section.

2.3 “Reflective Thinking” and “Inquiry”

People learn from experiences and make use of them in the future. Experiences are not just something that occur to people passively, but are rather an interaction that includes action. “Experience does not go on simply inside a person” (Dewey, 1938a, p.39). Rather, “Every genuine experience has an active side which changes in some degree the objective conditions under which experiences are had.” (Dewey, 1938a, p.39). Dewey states that “a separation of the active doing phase from the passive undergoing phase destroys the vital meaning of an experience.” (Dewey, 1916, p.162) Based on this idea, Dewey saw knowledge as experiences that accompany actions.

“To ‘learn from experience’ is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence. Under such conditions, doing becomes a trying; an experiment with the world to find out what it is like; the undergoing becomes instruction --- discovery of the connection of things” (Dewey, 1916, p.151)

If one learns from experiences and tries to make use of it in following experiences, one must grasp in more detail the actions and results related to that experience. Dewey refers to this as “reflective thinking” or “deliberation,” the “intentional endeavor to discover specific connections between something which we do and the consequences which result, so that the two become continuous” (Dewey, 1916, p.156). With introspective thinking, one can know how certain behaviors and actions are related to certain results. As a result, in another similar situation, it becomes possible to grasp what is happening and control ones own actions.

“What he has learned in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow. The process goes on as long as life and learning continue.” (Dewey, 1938a, p.44)

Dewey emphasizes that “thinking is the method of an educative experience” (Dewey, 1916, p.176). Additionally, he says that “the sole direct path to enduring improvement in the methods of instruction and learning consists in centering upon the conditions which exact, promote, and test thinking.” (Dewey, 1916, p.164) In education, it is important not only to provide opportunities to have experiences, but to provide opportunities to reflect and encourage introspective thinking as well. Time to reflect is sometimes given in current education, but it is important to support high quality introspective thinking at the depth that is described by Dewey.

A more generalized view of what is being done with introspective thinking is “Inquiry”. An inquiry is the flow of an idea that starts with a doubt, proceeds into reasoning, and becomes a belief. Dewey explains Inquiry as “the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole.” (Dewey, 1938b, p.167)

The concept of “Inquiry” was originally discussed by Charles Sanders Peirce and adopted by Dewey. Peirce’s beliefs have a unique position in the study of logic, as it is not based on psychology, and other than induction and deduction, he believed abduction of hypothesis formation to be a basic logical operation in Inquiry. Dewey also wrote a book titled “Logic” that discusses Inquiry in detail.

Inquiry begins when one encounters something new or when one's belief in something is swayed. It is an indeterminate state, which is both chaotic and contradictory. From there it heads to a calming conviction and once reached, it stabilizes. Starting from the uneasy state of doubt, the process of inquiry emerges, and the firm state of belief is reached at the end. Thinking and inquiry are an "adventure" because they move forward one step at a time away from the beginning chaos.

"It also follows that all thinking involves a risk. Certainty cannot be guaranteed in advance. The invasion of the unknown is of the nature of an adventure; we cannot be sure in advance. The conclusions of thinking, till confirmed by the event, are, accordingly, more or less tentative or hypothetical." (Dewey, 1916, p.159)

The "belief" obtained as a result of Inquiry can also be called "knowledge". As a result of thinking and inquiry, people acquire some kind of "knowledge". However, "knowledge" is not absolute, and it is possible that new doubts may arise in the course of experience and change as a result of Inquiry.

"The 'settlement' of a particular situation by a particular inquiry is no guarantee that *that* settled conclusion will always remain settled. The attainment of settled as not to be exposed to further inquiry. It is the convergent and cumulative effect of continued inquiry that defines knowledge in its general meaning." (Dewey, 1938b, p.21)

In Inquiry, one end is the beginning of the next quest, meaning that there is a "continuity in Inquiry" (Dewey, 1938b, p.222). Dewey states that "the conclusion reached in one inquiry become means, material and procedural, of carrying on further inquiries" (Dewey, 1938b, p.222). Therefore, Dewey says it is more appropriate to call the result of an Inquiry a "warranted assertion," rather than words that have a definite image such as "belief" or "knowledge." All Inquiries are based on the result of a previous inquiry, and it is a cumulative organization.

Dewey emphasized the importance of "trials" and "experiments" to carry out such Inquiries. This is to try it hypothetically and move forward. He sees the Inquiries of both experiences of students in school and the experiences of researchers doing experiments to be the same sort of continuous process. This point overlaps with Piaget's idea that was mentioned in an earlier paper.

"The most direct blow at the traditional separation of doing and knowing and at the traditional prestige of purely 'intellectual' studies, however, has been given by the progress of experimental science. If this progress has demonstrated anything, it is that there is no such thing as genuine knowledge and fruitful understanding except as the offspring of doing. The analysis and rearrangement of facts which is indispensable to the growth of knowledge and power of explanation and right classification cannot be attained purely mentally --- just inside the head. Men have to do something to the things when they wish to find out something; they have to alter conditions. This is the lesson of the laboratory method, and the lesson which all education has to learn." (Dewey, 1916, p.291-292)

Experiments are not only important in science. Dewey says that doing experimental trial and error based on "materials of experience" is essential in every aspect of everyday life.

"The first stage of contact with any new material, at whatever age of maturity, must inevitably be of the trial and error sort. An individual must actually try, in play or work, to do something with material in carrying out his own impulsive activity, and then note the interaction of his energy and that of the material employed. This is what happens when a child at first begins to build with blocks, and it is equally what happens when a scientific man in his laboratory begins to experiment with unfamiliar objects." (Dewey, 1916, p.165)

This is true of all professionals.

"Farmer, mechanic, painter, musician, writer, doctor, lawyer, merchant, captain of industry, administrator or manager, has constantly to inquire what it is better to do next. Unless the

decision reached is arrived at blindly and arbitrarily it is obtained by gathering and surveying evidence appraised as to its weight and relevancy; and by framing and testing plans of action in their capacity as hypothesis: that is, as ideas." (Dewey, 1938b, p.255)

Dewey not only discussed the above teaching theory, but actually created a "Laboratory School" in Chicago and put his ideas into practice. He recalls an event from that time, that occurred during a trial and error scene of cooking.

"One of the children became impatient, recently, at having to work things out by a long method of experimentation, and said 'Why do we bother with this? Let's follow a recipe in a cookbook.' The teacher asked the children where the recipe came from, and the conversation showed that if they simply followed this they would not understand the reasons for what they were doing. They were then quite willing to go on with the experimental work." (Dewey, 1900, p.38)

This story is true not only for children but also for adults, and it will be an increasingly important attitude in a Creative Society. Finally, I would like to quote Dewey's following words in relation to creative learning.

"Surrender of what is possessed, disowning of what supports one in secure ease, is involved in all inquiry and discovery; the latter implicate an individual still to make, with all the risks implied therein. For to arrive at new truth and vision is to alter. The old self is put off and the new self is only forming, and the form it finally takes will depend upon the unforeseeable result of an adventure." (Dewey, 1925a, p.245)

Creating is learning, and in effect is also changing.

3. PATTERN LANGUAGE FROM THE PERSPECTIVE OF DEWEY'S THEORIES

Why does pattern language take the form of language? This is because, as Dewey states, "language is the only means of retaining and transmitting to subsequent generations acquired skills, acquired information and acquired habits" (Dewey, 1938b, p.95).

By using Pattern Languages while reflecting on experiences using Reflective Thinking, "the increment of meaning" (Dewey, 1916, p.84) becomes possible. Additionally, the content of patterns hold "an added power of subsequent direction or control" (Dewey, 1916, p.84).

When put in terms of the Kolb's Experimental Learning Cycle, patterns can be used as a point of view in "introspective observation" that looks back on concrete experiences (fig 32). This is pattern languages' function as "Glasses of Recognition". Patterns provide perspectives (concepts) to recognize important practices from whole, continuous, concrete experiences.

Amongst people who focus on "Learning from Experience," there are some who say that rather than simply using the abstract and verbalized pattern, why should one not actually do the abstraction by oneself. While thinking and taking things abstractly is significant, abstraction is a very difficult task, and often times it is not actually performed (this is my feeling as a teacher of modeling and abstraction).

If so, using abstracted / verbalized patterns as reinforcement to experience the transitions of concrete and abstract ideas may be better, is my response from the perspective of pattern language.

Moreover, from the standpoint of learning constructivism, it is impossible in principle to acquire and learn pattern language through simply the transfer of knowledge, so it should be understood that all patterns should be acquired constructively. In the light of Piaget, when you read the description of a pattern, you can construct a corresponding recognition only if it can be assimilated into your own structure or schema. Furthermore, in the light of Vygotsky, neither scientific concepts nor patterns can be learned without spontaneous everyday concepts or practical knowledge.

In other words, it can be said that when seen from a Constructivist standpoint, the worry that Pattern Languages will replace one's experiences and interfere with learning, is null. The following quote by Dewey is related to this idea.

"Part of his learning, a very important part, consists in becoming master of the methods which the experience of others has shown to be more efficient in like cases of getting knowledge, These

general methods are in no way opposed to individual initiative and originality --- to personal ways of doing things. On the contrary they are reinforcements of them. For there is radical difference between even the most general method and a prescribed rule. The latter is a direct guide to action; the former operates indirectly through the enlightenment it supplies as to ends and means. It operates, that is to say, through intelligence, and not through conformity to orders externally imposed." (Dewey, 1916, p.184)

Listening to patterns as a "general method" mentioned here and to the experiences of others who are concrete examples of that pattern will become reinforcement to help one thing and act on one's own in a similar scene.

4. CONCLUSION

In this paper, we discussed Constructivism in terms of Pragmatism using John Dewey's theories, specifically the "Principle of Continuity of Experience", "Reconstruction of Experience", "School as a Community", "Reflective Thinking" and "Inquiry". Additionally, we discussed how Pattern Language makes "the increment of meaning" (Dewey, 1916, p.84) possible by reflectively thinking about experiences, as well as how Pattern contents hold "an added power of subsequent direction or control" (Dewey, 1916, p.84). In this paper, we discussed these ideas using John Dewey's theories and viewing them in a Constructivist light. However, in the earlier works of this series of papers, we discussed Constructivist Learning Theories using the ideas of Jean Piaget (Iba and Munakata 2019), Lev Vygostky (Iba and Burgoyne, 2019) and Seymour Papert (Iba and Iwata, 2019), so we would recommend everyone to read those as well.

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