

CHALLENGES IN INTEGRATING LEARNING AND WORK – THE CASE OF FACILITATED WORK BASED LEARNING

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Abstract: The paper argues that it is possible to overcome the difference between work and learning by applying John Dewey's pragmatic philosophy. The argument is based on a thorough investigation of Facilitated Work Based Learning (FWBL) made as part of my Ph.D.-dissertation. Dewey's pragmatic notions of experience, reflective thinking and problem orientation are outlined and used in order to reach an understanding of why the participants in the FWBL programme found it difficult to reach an understanding of FWBL. The perspective that work and learning belong to two different paradigms appeared to have much influence on the participants' difficulties in grasping FWBL combined with the fact that reflective thinking was not applied.

1. INTRODUCTION

Over time, the relation between learning and work has been investigated in numerous ways and the focus point has often been how to overcome the challenges and problems, which seem to appear in the tension field between the two. An approach, placed in the field of integrating learning and work, is Facilitated Work Based Learning (FWBL). The objective of FWBL is to offer special designed continuing education to engineers, who after earning their degree, have started working in various types of engineering companies. FWBL is highly inspired by Problem Based Learning (PBL) used as the pedagogical approach at Aalborg University, Denmark.

Inspired by John Dewey's pragmatism, it is investigated why the participants in the FWBL programme express difficulties in reaching an understanding of FWBL. The participants understand learning and work (problem solving) as two separated things, which belong to two different paradigms. This understanding appears to have extensive influence on why it is difficult to grasp FWBL. Learning and problem solving are areas integrated in FWBL, and this is an issue which the participants find difficult to understand as it differs extensively from their perspective. It is argued that Dewey's notion of reflective thinking can help explain why the participants find FWBL difficult to understand. Finally, the paper suggests that we might be stuck in the understanding that work and learning belong to two different paradigms, and that this understanding prevents us from discovering any alternative perspectives that are more fruitful in the discussion of how work-related problem solving and learning can be combined.

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The paper is based on two FWBL cases investigated as part of my Ph.D.-dissertation. The cases were conducted in co-operation between Aalborg University and two software development companies. As a researcher I followed the activities on the sideline and did not have any active role in the FWBL programme. The empirical material is based on interviews with all the actors spread out on several times during the FWBL programme. Furthermore, the meetings between actors from the companies and the university were taped.

2. FACILITATED WORK BASED LEARNING

Facilitated Work Based Learning is now shortly described in order to outline the content and structure of the approach including its theoretical foundation.

In a Danish context Problem Based Learning (PBL) was introduced as a pedagogical approach at the same time as the establishment of two new universities in the beginning of the 1970s (Aalborg University in 1974 and Roskilde University in 1973) (Kolmos, Fink & Krogh 2004), (Kjersdam & Enemark 1994). In the early 1970s, PBL was a new and different approach to education, which clearly contrasted how education traditionally took place at universities. Theoretically, PBL is inspired by the German philosopher Oscar Negt and especially the American philosopher John Dewey. In a Danish context Knud Illeris (Illeris 1974), (Berthelsen, Illeris & Poulsen 1977) among others, has been one of the main contributors in developing PBL.

In the beginning of the 1970s PBL was not a well-established and well-founded approach for educating students at university level and the approach was much criticised. However, as years have gone, the opinion about PBL has changed, and today elements of PBL are implemented in many different types of education. Especially in the business world there has been a positive change of attitude towards PBL. The reason for this is that students graduating from Aalborg University have proved to be good at working in project groups and good at solving real life problems by applying different theories and methods. These skills are not necessarily obtained in traditional education systems, where students during lectures are passive listeners and evaluated according to their ability to reproduce the presented theories and methods as accurate as possible.

At Aalborg University a variety of learning methods are used in curricula, and here education is centred on real life problems and not solely theoretical problems (Krogh, Olsen & Rasmussen 2008). Students will attend lectures, but a large part of the education will be based on students working together in project groups. During project work, the students study real life problems which they themselves have chosen to investigate by applying different theories and methods. The students are not evaluated according to their ability to reproduce theoretical positions as such, but according to their ability to define the investigated problem and apply relevant theories and methods in order to solve it.

FWBL is inspired by the way PBL is used in order to educate engineers at Aalborg University, and originally developed with the purpose of offering supplementary education to engineers who have finished their engineering education and which are now working in companies solving engineering problems (Nørgaard & Fink 2004). Furthermore, the aim is to reduce the distance between business and science in order to decrease the time from scientific invention to implementation in problem solving processes in companies. If participating in FWBL, companies will get a tailored

programme organised according to their specific problems and challenges. Hence, the content is defined in close co-operation with the company especially with the project manager and the participants (engineers). The objective is to run a programme, which is as closely connected to the engineering problems in the company as possible. As a means of supporting this, FWBL is flexible in the sense that content and time schedule can be changed when the programme has started. The participants do not obtain a degree or a diploma due to participation; the objective is to provide new knowledge to the participants, which they can use immediately in problem solving.

The content of the FWBL programme is not solely defined by the project manager, as it is important to involve the participants, because they are the ones experiencing which types of e.g. theoretical knowledge they are in lack of. The content is also defined according to the participants' present type and level of knowledge. Hence, the overall content of the FWBL programme is based on the everyday working life of the participants, the problems they are dealing with and their present experience. Furthermore, participants are involved in defining the content of the FWBL programme in order to increase their interest in participating.

The term 'facilitator' is deliberately used in order to underline that he/she is not a 'normal' teacher. The facilitator is responsible of presenting theories and methods when relevant during the FWBL programme. Furthermore, the facilitator is responsible of supervising the participants in relation to the problems which turn up when applying new theory during the process of solving real life engineering problems. As it appears, it is the engineers who solve the problems not the facilitator. The facilitator does not have the right answers but only suggestions. A reason for this is, that it is the participants who have the best insight into the problem combined with the fact that it is through the process of solving the problem that learning develops. Thus, the facilitator is neither a teacher nor a consultant taking over the task of solving the problem (Nørgaard & Fink 2004), (Rokkjær & Fink 2004).

To sum up, the idea is to reach two objectives through one FWBL programme: 1) a learning process with focus e.g. new theory or methods and 2) a learning process based on problem solving. The main objective is learning and not problem solving as such and the intention is to remove the gap between learning and problem solving by integrating them.

Based on the above, it is possible to identify some main convergences between FWBL and PBL (Thomassen 2009:71).

- 1) Learning is not centred on theoretical issues, but around solving real-life problems
- 2) Learning develops through problem solving
- 3) The main objective is not to solve the real life problem, but to be able to identify and describe the problem and to apply relevant theories and methods with the objective of problem solving
- 4) The facilitator/teacher is a supervisor and he/she does not have the right answers, only suggestions
- 5) It is important to involve the students/participants
- 6) The students are not solely evaluated according to their ability to replicate theory as accurately as possible. It is more important to be able to apply the theory or method in problem solving

So far FWBL has been used within continuous education of engineers, however, it is also a possibility to use the approach during continuing education of other types of professionals e.g. within economy, marketing, chemistry etc.

3. EXPERIENCE, REFLECTIVE THINKING AND PROBLEM ORIENTATION

As mentioned in the introduction, John Dewey's pragmatism is the theoretical perspective applied in order to investigate why participants express difficulties in understanding FWBL. Dewey has developed a complex and multifaceted theoretical perspective. In this paper the notions of experience, reflective thinking and problem orientation are applied, as I perceive these as helpful in order to gain new insights into why obstacles occur. Furthermore, the notions of experience, reflective thinking and problem orientation are used later on in order to outline how and why it is possible to improve the link between work and continuing education.

Dewey's pragmatic theory has extensively influenced theory development within learning and education. Especially his perspective on learning through problem solving has had enormous impact, and Dewey is perceived to have laid the foundation of problem based learning (PBL) (Thomassen 2005), (Jørgensen, Strand & Thomassen 2011). Dewey criticised traditional education and how students in this tradition is viewed as passive objects who gain new knowledge through passive participation in learning activities. From Dewey's point of view learning (experience) is developed through active involvement with the social circumstances in which the individual is situated (Dewey 1916/2005:174).

3.1 EXPERIENCE

An issue which is quite often discussed within philosophy is how a mind, which is separated from the world, can gain knowledge about the world. This issue is based on a dualistic approach in which reality is perceived to consist of two parts; mind and world, and it is the minds' ability to create a connection to the world which defines the possibility of gaining knowledge. Over time, many theorists have tried to answer this question. Dewey's starting point is not an epistemological discussion concerning how we gain knowledge about the world; instead his starting point is ontological concerning how we are *in* the world, a difference which to great extent influences how social contexts are perceived to influence experience (Fink 1974:14), (Biesta 2009:62).

Dewey highly disliked the dualism of ontology and epistemology, and throughout his authorship, he argued in favour of combining the two. From Dewey's point of view, dualism had many negative consequences on the notion of experience; consequences which he outlines in this quotation:

"We have been concerned with the influences which have effected a division between work and leisure, knowing and doing, man and nature. These influences have resulted in splitting up the subject matter of education into separate studies. They have also found formulation in various philosophies which have opposed to each other body and mind, theoretical knowledge and practice, physical mechanism and ideal purpose. Upon the philosophical side, these various dualisms culminate in a sharp demarcation of individual minds from the world, and hence from one another". (Dewey 1916:291)

As we are *in* the world, we do not perceive the world from the outside. This implies that we do not gain experience by being a part of social practises, but by participating in social practices, meaning that we participate in the social practices unfolding in a context. Or explained differently; social context only exists as social practise and the only way it is possible to be a part of a social practise is through engagement and participation. As it appears, social contexts are important in Dewey's pragmatic thinking, as it is impossible to separate actors from the world (Dewey 1936/1974:55).

From Dewey's point of view, actions are the starting point for experience, the reason being that we are always already in a relation with the world. Back in 1898 Dewey put forward this argument in a sensational article criticizing the predominant opinion that human action occurs due to influence from the surroundings (Dewey 1898:215-229), (Elkjaer 2009:78). Furthermore, to learn from experience is from Dewey's point of view to create a backward and forward connection between our actions and the consequences of these, implying the consequences we must enjoy or endure due to our actions. This implies that

"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 1916:140)

The notion of continuity is fundamental within Dewey's thinking, as a close connection exists between the experience you have and the experience you will get in the future, the reason being that new experiences are gained on basis of the experiences you already have. Consequently, if a new theory is presented, but the distance between the person's present experience and the new theory is too large, the new knowledge which the theory represents will not become a part of that person's experience. Dewey gives the following example:

"The material of thinking is not thoughts, but actions, facts, events, and the relations of things. In other words, to think effectively one must have had, or now have, experiences which will furnish him resources for coping with the difficulty at hand. (Dewey 1916:156)

3.2 REFLECTIVE THINKING

Dewey used the word 'interaction', and late in his authorship 'transaction' (Dewey & Bentley 1949/1991), to explain the interplay between actor and world. Transaction refers to the interplay between world and actor and reflective thinking is the content of this interplay. Hence, reflective thinking is the "tool" which can bring people an insight into the relation between action and response from the social context. Dewey explains it in the following way:

"Thought or reflection, (...) is the discernment of the relation between what we try to do and what happens in consequence. No experience having a meaning is possible without some element of thought". (Dewey 1916:144)

All experience develops out of a trial and error phase, which means that during a continuous number of trials (actions) an actor tries to solve an experienced problem until he succeeds. The trial and error method does not give any insight into the relation between action and result, meaning an insight into why a specific action solved the

problem. It is possible to go further than the trial and error phase and use reflective thinking in order to create a connection between "(...) cause and effect, activity and consequence" (Dewey 1916:145). The insight into the content of the relation between action and result becomes better and experience is gained. As new experience is gained, the actor becomes better and better at solving future problems, because the actor has a better foundation on which to base his actions. In the following way Dewey explains the influence of reflective thinking on experience.

"In discovery of the detailed connections of our activities and what happens in consequence, the thought implied in cut and try experience is made explicit. Its quantity increases so that its proportionate value is very different. Hence the quality of the experience changes; the change is so significant that we may call this type of experience reflective – that is, reflective *par excellence*. The deliberate cultivation of this phase of thought constitutes thinking as a distinctive experience". (Dewey 1916:145)

When experience is gained through reflective thinking concerning action and consequence, these are no longer perceived as separate. Instead, the actor becomes knowledgeable about why and how an action leads to a certain consequence, thus from the actors' point of view a troublesome situation is cleared away.

The launch pad for reflective thinking is the interplay between actor and social context. An action is made and a specific consequence/result is expected. However, the expected does not occur. Thus, a discrepancy is experienced based on the interaction for which the reason is that adaptation to the social context does no longer occur automatically, as a certain action is no longer suitable. When an actor faces a problem he has two options 1) he can abstain from solving the problem or 2) he can seek to solve the problem through reflective thinking. The process leading from problem to solved problem is called inquiry. Reflective thinking is included in inquiry and through this process you will gain experience. Dewey explains it in the following way

"(...) the function of reflection is to bring about a new situation in which the difficulty is resolved, the confusion cleared away, the trouble smoothed out, the question it puts answered. Any particular process of thinking naturally comes to its close when the situation before the mind is settled, decided, orderly, clear, for then there is nothing to call out reflection until a new bothersome or doubtful situation arises.

The function of reflective thought is, therefore, to transform a situation in which there is experienced obscurity, doubt, conflict, disturbance of some sort, into a situation that is clear, coherent, settled, harmonious". (Dewey 1933:100)

Reflective thinking is the method by which we as humans can construct experience which makes it possible to solve present problems, along with the possibility of solving future problems in a better way, the reason being that we get more experience on which to base our actions. Thus, our actions become more qualified helping us in our search for harmony with the social context in which we are a part, even though harmony is a temporary situation which is quickly superseded by new problems (Thomassen 2009:40).

3.3 PROBLEM ORIENTATION

The notion of experience influences Dewey's view on the objective of education and how education should be structured. As outlined in the above, experience is based on a criticism of dualism separating mind and body. Thus, Dewey criticises the type of education focusing solely on the subject without any focus on how the issues dealt with can be applied in real life settings and when the experience of the participants/learners is not taken into consideration. This criticism is the starting point of Dewey's educational thinking concerning structure and content (Dewey 1936/1974:79).

Dewey puts forward the argument that education should be structured around empirical (everyday problems) and not mainly theoretical issues. Having everyday problems as the centre of education should increase the possibility of making a relation between the experiences gained through education and life as it is lived outside the educational system.

It is very important to include the participants when defining the content of the education. The content must be based on issues which the participants perceive as problematic. The reason is that a teacher can easily present a theoretical subject and argue that problems are related to this, and the participants understand what the teacher is saying. However, it is not the participants which are experiencing the problem; it is the teacher which is experiencing it. Experience/learning occurs due to an inner feeling of being in a problematic situation, and not because a teacher or others tell us that a problematic situation exists. The notion of continuity has much impact on why the participants must be involved, as through continuity it is emphasised that the participant must be able to make relations between his present experiences and the problem dealt with during education (Dewey 1916/2005:148). As it appears, Dewey's perspective on experience highly influences the argument of involving the participants.

Traditionally, the teacher has defined the academic content without considering the participants' experiences and the problems they face during work. Furthermore, the teacher had more power and was positioned above the participants. When the centre of education is no longer theoretical issues as such, but problems experienced by the participants, the role of the teacher changes. Dewey argues that the role of the teacher should be redefined, implying that the teacher is not someone placed at "the outside". Instead the teacher is the leader of the participants, implying that the teacher, based on his/her more extensive experience, guides the participants during their learning process. Thus, the teacher is perceived as a guide supporting the participants' possibility of gaining new experience and not as someone who has the right answers or solves the participants' problems. Consequently, experience is not something which can be given to the participants, instead they must be actively involved. Thereby, we return to what was stated at the beginning of the paper; that experience is based on active involvement with the world.

4. FWBL IN PRACTICE

Aalborg University has conducted two FWBL courses in co-operation with two software development companies. In each of the two courses, two engineers participated. The project manager from each company was not directly involved in the learning activities. A facilitator was connected to each course. The two facilitators were Ph.D.-students. Prior to being Ph.D.-students both facilitators worked as software engineers in different companies.

The FWBL programme is shortly described in a kind of booklet (Fink & Nørgaard 2006), which was handed out to the participants at the beginning of the course. In the booklet the structure of FWBL is explained e.g. that the content of the course is centred on real life problems and not theoretical problems. It is mentioned that FWBL is not traditional education, but it is not clearly described how it is different. An example of this is that in the booklet the required qualifications of the facilitator are described, but, the co-operation between participants and facilitator is vaguely described. For someone having no prior experience with PBL or FWBL, the formulations in the booklet make it difficult to grasp that the objective within FWBL is learning and not mainly problem solving.

During interviews, the participants in various ways explain that they have had difficulties in understanding what FWBL is. Especially one of the participants clearly explains that at the end of the FWBL programme he still does not know what FWBL is all about, and he is confused about the intentions of the university; why was the university interested in running the FWBL programme, and what was the university's objective e.g. how did the university perceive it as possible to combine problem solving and education? The participant explains that it would have been nice to know more about the content of the agreement made between the university and his project manager the reason being, that from the participants' point of view the objective of the university was very different from the objective he and his project manager were aiming for (Thomassen 2009:101).

At the beginning of the FWBL programme, the facilitator tells the participants that FWBL is something different – it is not 'normal' education. This notion is also supported by the above mentioned booklet. Throughout the FWBL programme the participants try to create an understanding of FWBL, what it is and in which way it is different. However, during interviews the participants explain that they are as confused at the end of the programme as in the beginning. Their understanding of FWBL has not changed significantly even though they have been participants. The feeling of not understanding FWBL has extensive impact on how the participants act during the FWBL programme and the opinion about e.g. the collaboration with the facilitator (Thomassen 2009:106).

Throughout the FWBL programme central concepts are used when facilitator, project manager and participants communicate. Some of the main concepts are: problem, problem orientation, project work, problem solving and facilitator.

5. WHY IS FWBL DIFFICULT TO UNDERSTAND?

Dewey's pragmatic notions of experience, reflective thinking and problem orientation are used in the following in order to understand why the participants find it difficult to reach an understanding of FWBL. Continuously, we participate in different social practices e.g. at work, in our family or during spare time activities. During our actions we influence these social practices and they have influence on us. Based on our participation in these social practises, we develop certain experiences including certain understandings of concepts. Our understanding of concepts is constantly expanded, and we use concepts as 'tools to think with' (Elkjaer 2005) in the process of gaining new experience. When a problematic situation is experienced, we act on the basis of our present experience and a response is returned (Dewey 1916). The response shows us the extent to which we have reached an understanding of the problematic situation. Thus, we use our understanding of e.g. concepts in order to solve the problem we experience.

Based on the empirical material, which was collected during the FWBL programmes, it became clear that the participants experienced a difficulty in reaching the *right* understanding of ‘problem’, ‘facilitator’, and ‘problem solving’. At the beginning of the FWBL programme, the participants already had an understanding of these concepts, however, their understanding differed from the understanding put forward in the booklet and explained by the facilitator. Thus, the participants had the feeling that their understanding was different from the understanding on which the FWBL programme is based, but they were not able to reach an understanding of the difference. Throughout the FWBL programme the participants act based on their present understanding e.g. they send e-mails to the facilitator asking for answers related to very specific problems. This action was based on an understanding of the facilitator being a consultant who can solve specific work-related problems. To a certain extent the facilitator did answer the questions, however, at the same time the participants were told that this was not the facilitator’s task; they themselves had to do the problem solving. The participants were confused! They did not understand the facilitator’s response. They did not understand the role of the facilitator. How could the facilitator be involved in the FWBL programme and help the participants if the facilitator was not supposed to answer questions? The participants made an action, asking the facilitator certain questions, but they did not understand the response. The participants kept trying and trying in order to reach an understanding of FWBL, but they did not reach an understanding of FWBL, which eliminated their uncertainty. Instead, the fact that they did not understand FWBL was continuously confirmed.

From a pragmatic point of view, there are two reasons as to why the participants did not reach an understanding of FWBL. One reason being the fact that the difference between the participants’ experiences and FWBL was too large. Based on their present experiences, the participants could not, make a connection to the new approach. Thus, from the participants’ point of view FWBL was simply just a fact, something hollow without meaning. Another reason was that the participants’ actions were based on trial and error not engaging in reflective thinking. That this was the case became clear during the interviews, as the participants explained that they did not understand the reactions of the facilitator, however, they did not engage in a process of trying to understand why the facilitator acted this way (Thomassen 2009).

Another issue having extensive impact on the participants’ difficulties in understanding FWBL is the relation between problem solving and learning/education. During interviews the participants express that they have difficulties in understanding how learning activities can be combined with solving work-related problems (Thomassen 2009:103). From the participants’ point of view learning/education takes place at educational institutions and problem solving takes place in companies; you are introduced to different theories and methods during education and if possible you apply them during work. Hence, from the participants’ point of view education and problem solving are based on two different paradigms which can hardly be combined (Thomassen 2009:105).

FWBL is based on a different perspective, as learning and problem solving is integrated in the same process. Thus, FWBL is based on a paradigm different from the traditional one separating education and work (problem solving). In order to reach an understanding on how learning and work can be combined, the participants apply their understanding of education and work belonging to two different paradigms. They act on the basis of this understanding; however, the response they receive from e.g. the

facilitator does not confirm their understanding. Instead, it becomes increasingly clear to the participants that they are not in a process of gaining a better understanding of the combination of education and work. Consequently, the participants find it difficult to understand the notion of problem orientation. During interviews the participants explain that from their point of view problem orientation implies that they are *oriented* towards solving work-related problems (Thomassen 2009).

The above arguments concerning why the participants find it difficult to grasp the role of the facilitator can be repeated in order to explain why the participants find it difficult to understand the notion of problem orientation. The first reason is the distance between the participants' understanding of problem orientation and the understanding included in FWBL. Due to the distance, the participants have difficulties in making a relation to the understanding embedded in FWBL. The second reason being the fact that the participants do not engage in reflective thinking, but continues to use trial and error. Thereby, the participants do not reach an understanding of the content of the transaction unfolding in the social practise.

The facilitator's actions during the FWBL programme are based on for example his understanding of how work and learning can be combined and the role and task he is responsible of. The facilitator's understanding is, like the participants', developed through active participation in social practices, however, the facilitator has been involved in other social practices for which reason the facilitator's understandings are different.

The co-operation between the facilitator and the participants is complicated due to their differences in experience and because they have different understandings of the same concepts. As the FWBL programme progressed, especially the participants expressed, that they sensed a difference in meaning, regarding the same concepts. Neither the participants nor the facilitator engaged themselves in the process of investigating the differences in meaning. Thus, the participants and the facilitator did not gain a better insight into each others' understandings and consequently, they did not approach each other, but continued within their own realm of understanding.

The participants' difficulties in removing the feeling of not understanding FWBL, combined with the different understandings of central concepts, had major impact on how the FWBL programme unfolded. In the beginning of the FWBL programme ambitions were high, and the participants and the facilitator had a positive attitude towards their co-operation. However, the positive attitudes were soon removed by more reluctant ones as the communication between the participants and the facilitator was complicated due to their different understandings and because the participants increasingly expressed difficulties in reaching an understanding of FWBL. Within a short period of time the FWBL programme faded out, as the participants and the facilitator simply stopped to communicate (Thomassen 2009). Consequently, what from the outset was meant to be an interesting co-operation focusing on learning and problem solving came to be a negative experience.

6. CONCLUDING REMARKS

FWBL is based on an integration of learning and problem solving. However, based on the above this integration appears to have major influence on why the participants find it difficult to grasp FWBL. The reason is that FWBL is based on one paradigm and the participants use another. A more significant problem is that the participants do not use

reflective thinking in order to reach a better understanding of the differences between them and the facilitator, and as the participants do not use reflective thinking they will never come closer to understanding FWBL. Hence, the potential of FWBL will not become visible to the participants until they, via reflective thinking, leave their former old understandings behind.

What is the main problem put forward in the above? The main problem is that the perspective of work and education, belonging to two different paradigms, keeps the participants, and maybe also the rest of us, restrained in this understanding (Thomassen 2011). Thus focus is kept on the incompatibility of work and learning instead of moving one step up in order to reach more overall conclusion regarding how work and learning can be integrated. I perceive Dewey's pragmatism to be an approach, which can bring us further in our understanding of how learning and problem solving can be integrated, because by default these are integrated in the same process. However, if we are to discover the potential of applying Dewey's pragmatism, we must put aside our 'traditional' understandings of learning and problem solving and apply a new.

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