

# Towards Understanding When Service-Learning Fosters Efficacy Beliefs of Preservice Teachers

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## **Abstract**

This research uses a mixed methods approach in focusing upon the role service-learning can play in enhancing preservice teachers' sense of efficacy. Results of the quantitative component reveal significant gains in efficacy beliefs of preservice teachers who engaged in a service-learning project during a course in their teacher preparation. At the completion of a service-learning project, preservice teachers shared their perceptions of their participation through written reflections. Qualitative analysis of the preservice teachers' written reflections and the characteristics of the service-learning experience uncover sources of efficacy, providing guidance for planning service-learning in teacher education. Additionally, findings document the importance of providing preservice teachers learning experiences that are authentic while also providing ample support for success.

*Keywords:* service-learning, preservice teachers, self-efficacy, physical education, teacher education

All students deserve effective teachers, and students from marginalized populations especially rely upon effective teachers. Although various factors can affect teacher quality, teacher preparation programs have a major responsibility and opportunity to make a difference in helping preservice teachers become effective teachers. One of the most well-documented aspects of effective teaching is a teacher's confidence about being able to influence students' learning, or sense of efficacy (Henson, Kogan, & Vacha-Haase, 2001). Studies have revealed that classrooms of highly efficacious teachers are characterized by positive factors, including higher student achievement (Woolfolk-Hoy & Davis, 2006; Anderson, Greene, & Loewen, 1998; Shahid & Thompson, 2001); instructional innovation (Ghaith & Yaghi, 1997); persistence (Ash-ton, 1984); and student motivation (Tschannen-Moran, Woolfolk & Hoy, 1998). Conversely, teachers not confident tend to be pessimistic regarding students' success, and they undermine students' self-assessments (Pajares, 2000).

Given the importance of efficacy beliefs, teacher educators need to know how to enhance efficacy. The importance of knowing how to enhance efficacy beliefs has been acknowledged in our field, and research on teacher efficacy is not new. However,

teacher education seemingly has fallen short in fostering efficacy beliefs in view of rates of teacher retention and students' success in challenging teaching situations.

This research focuses upon how service-learning can foster preservice teachers' sense of efficacy. Using a mixed methods design, we compared gains in efficacy of preservice teachers when they engaged in a service-learning project in a course to their efficacy gains in a previous course where they did not engage in service-learning during their teacher preparation. A qualitative analysis of the preservice teachers' perceptions about their participation yielded understanding of how service-learning fosters efficacy and factors that play a role.

This current study extends a previous study that examined gains in efficacy, where findings showed that if preservice teachers engaged in service-learning during their teacher preparation, they experienced statistically significant gains in efficacy (Nelson, Tice, & Theriot, 2008). Along with building upon that research by examining additional data obtained over additional semesters, we extend the previous study through the qualitative component of this study. Through the qualitative component, we sought to

understand how service-learning could foster a sense of efficacy and factors that seem to play a role when service-learning experiences foster efficacy beliefs, findings which could guide planning and implementation of service-learning.

The research questions of our inquiry that we addressed through quantitative analysis are as follows: 1) Are there significant differences in the gains in efficacy scores of preservice teachers when they engaged in a service-learning experience in a teacher preparation course as compared to when they did not engage in service-learning in a teacher preparation course? (2) Are there significant differences in reported gains of efficacy when comparing gains associated with the courses across semesters? The first question pertained to whether preservice teachers would show gains in efficacy when they engaged in service-learning, based upon measures of efficacy administered at the beginning of a course and at the end of a course. The second research question pertained to consistency, or whether comparative gains in efficacy differ, depending upon the semester or time under consideration.

Through a qualitative analysis we addressed the following research questions: 1) How do service-learning experiences seem to foster preservice teachers' sense of efficacy? (2) What factors seem to play a role in regard to service-learning experiences fostering a sense of efficacy? We addressed these questions through analyzing reflections of preservice teachers who engaged in service-learning and the data describing how service-learning was incorporated in the courses.

### **Conceptual Framework**

Teacher efficacy is based upon work of Bandura (1977, 1986) who purports that efficacy beliefs affect human agency in various ways, including people avoiding tasks and not putting forth effort where they do not feel confident. Efficacy also affects emotional reactions and choices, such that people with low efficacy attribute difficulty to lack of ability rather than viewing effort as a way to overcome difficulty. Also, people tend to avoid situations where they feel they cannot succeed. Thus, as suggested previously, levels of efficacy affect how teachers interact with students and the amount of effort teachers are willing to put forth in meeting educational outcomes. Research also has uncovered two types of efficacy

beliefs related to teaching that can be measured: general teaching efficacy and personal teaching efficacy (Woolfolk & Hoy, 1990). Personal efficacy is defined as the teacher's belief that he or she can be effective in reaching teaching goals. Teacher efficacy is the teacher's belief that teachers in general can be effective in reaching teaching goals regardless of obstacles.

Bandura (1986) also sets forth four sources of efficacy that can be applied to teacher education: mastery experiences, vicarious experiences, social persuasion, and affective states. Mastery experiences serve as the most influential source, whereby teachers experience success and predict they will be successful in future situations. Through vicarious experiences, teachers see others like themselves being successful and perceive that they also can be successful. Another source of efficacy relates to social persuasion, such as people cultivating teachers' beliefs that they can succeed while also ensuring success is attainable. A fourth source relates to physiological/affective states, or emotions that affect teachers' sense of being able to succeed.

Previous research has revealed particular learning experiences that help preservice teachers develop efficacy beliefs: successfully implementing strategies presented in coursework (Scott, 2003); engaging in collaborative problem-solving and reflection (Rushton, 2000); and offering recommendations to each other when collaborating (Henson, 2001). Service-learning is promising in offering these types of experiences that research has found enhance efficacy. Furco (2001) notes that "... service-learning is a teaching strategy that enhances students' learning of academic content by engaging them in authentic activities in which they apply the content of the course to address identified needs in the local and broader community." (p. 67). Along with reflection, service-learning can offer opportunities for collaboration that supports personal, social, and academic growth (Baldwin, Buchanan, & Rudisill, 2007; Hale, 2008; Wade, 2000).

Research that has focused on service-learning in teacher education indicates that service-learning has the potential to foster efficacy beliefs of prospective teachers. Root, Callahan, and Sepanski (2002) found that students with lower personal teaching efficacy scores showed improvement in their sense of personal teaching efficacy after engaging in service-learning. This research team did not find a

statistically significant increase in personal or teacher efficacy through participation in service-learning, but they stated that one reason may have been the initial high overall levels of efficacy beliefs on part of the students. Wasserman (2009) found that prospective classroom teachers who participated in service-learning as part of their preparation demonstrated higher levels of efficacy as compared to a comparable group of prospective teachers who practiced teaching strategies and techniques with their class members rather than working with a diverse group of children at a low-performing school. Additionally, the prospective teachers who participated in service-learning implemented what they learned in their course during their subsequent student-teaching experiences.

Research findings also indicate that teacher educators need to consider facets of service-learning experiences rather than implementing service-learning, *per se*. Root, Callahan, and Sepanski (2002) determined that perceived support during service-learning experiences was a positive predictor of general teaching efficacy. Similarly, Wasserman (2009) emphasizes that the prospective teachers who engaged in service-learning were able to see their instructor model teaching strategies. Additionally, a close link existed between what was experienced during class meetings and what the prospective teachers implemented in working with children. However, what still remains less clear is how service-learning fosters a sense of efficacy and other factors that could play a role when service-learning experiences foster or do not foster a sense of efficacy.

## Method

### Participants

The 76 participants in this study were teacher candidates, or preservice teachers, who were enrolled in a physical education program of study at a large urban university. As part of their first year of teacher preparation, or as juniors, all participants enrolled in a non-service learning course. During the next year, the preservice teachers enrolled in a course that included a service-learning component. The courses were comparable in that the students had the same instructor, and the students were part of the same cohort. Additionally, both courses focused upon pedagogy. The major difference of the courses was whether the course did or did not include a community based service-learning component. The course

that did not include a service-learning component provided laboratory type of learning experiences where the preservice teachers applied information of the course through providing learning experiences for class members that could eventually be used when teaching youth. The 76 participants were preservice teachers from three semesters of the pedagogy course that did not require service-learning and their three semesters of the subsequent course that required service-learning.

### Service-Learning Component

The service-learning projects of each course/semester required preservice teachers to collaborate with others in the course to plan and implement a curriculum-based project that entailed working with approximately 30-160 students from Title I public schools that served diverse student populations. The service-learning experiences entailed providing students adventure and outdoor activities through a field trip experience. The preservice teachers worked in a group of 7-14 members, depending upon the size of the course and areas of the curriculum that candidates preferred to focus upon for the project. Each group designed the service-learning project, so each project was different, and each group worked with a different school. Nevertheless, the types of experiences they provided the students were similar in that they all followed the same criteria in planning and implementing the project. All projects had the same basic features in being based on Project Adventure's methods of adventure education and Outward Bound's expeditionary learning programs. For example, one service-learning project was a team-based scavenger hunt at a state park that featured fitness concepts and science. Another project at the state park was a camping trip that focused on plant and wildlife ecology, fitness, nature conservation, orienteering, outdoor living, teamwork, problem-solving, and first aid. A project at a city park provided an array of outdoor education activities, such as adventure problem-solving, bow and arrow, orienteering, and disc golf.

Before each semester, the instructor for the course met with the community partners to determine whether these type of projects would be viewed as beneficial for their students and to help ensure the success of the projects. The instructor discussed with school administrators and teachers ways they hoped

the projects would serve their students. The discussions also focused upon guidelines and procedures for preservice teachers to use in planning and implementing their project.

Group planning took place during approximately eight weeks of the semester. At two points in the semester, each group presented their planning during a class meeting to receive feedback. Group planning also included conferences with the professor and communicating with the public school officials/faculty. Once projects were implemented, reflection took place and questions were addressed during class meetings. At the end of the service-learning project, the instructor asked preservice teachers to engage in written reflection, providing a candid, careful reflection about their service-learning experiences, including how these experiences related to their development as teachers. The written reflection was a major assignment of the course.

### **Quantitative Data Sources and Analysis**

Using a quasi-experimental design with a mixed model repeated measures approach, this study measured pre- and post-efficacy beliefs of preservice teachers when taking both the non service-learning and service-learning methods course. At the beginning and end of each of the six semesters, preservice teachers responded to an efficacy measure that has been used widely in efficacy research (Woolfolk & Hoy, 1990). The preservice teachers' responses to the efficacy measure made it possible to determine their general sense of teacher efficacy and personal sense of efficacy. Teacher efficacy is the belief that teachers in general/teaching can be effective in reaching teaching goals regardless of educational obstacles. Personal efficacy is defined as the teacher's belief that he or she can be effective in reaching teaching goals (Woolfolk & Hoy, 1990).

To account for some of the initial variance between the two types of courses, a two factor ANCOVA (Course Type x Time) was applied to the model. Covariates included pre-test scores for both the service-learning and non service-learning courses. This approach made it possible to examine whether preservice teachers' levels of personal efficacy and teacher efficacy changed as a result of experiencing a service-learning project. This analysis also made it possible to uncover any differences that existed over the time span of data collection, given the time

span of the times the three different service-learning courses took place. A significance level of  $p < .05$  was used to verify all differences in variability.

### **Qualitative Data and Analysis**

The major sources of data were the individual reflections each preservice teacher had written upon completing the service-learning project. The course content/class meetings devoted to preparing for the service learning-project also provided data for understanding characteristics of the service-learning experiences. Using a qualitative approach (Lincoln and Guba, 1985), we analyzed the written reflections. In analyzing the data, we individually and then together noted salient, repeated units of meaning to code. This analysis entailed a recursive process of reading, interpreting, rereading towards recognizing theme and categories that emerged from the data and relationships among categories. Further analysis entailed also examining characteristics of the service-learning experience to uncover an array of factors that seemed to play a role in service-learning fostering a sense of efficacy.

## **Results and Findings**

### **Quantitative**

The quantitative data analysis addressed the following research questions: 1) Are there significant differences in the gains in efficacy scores of preservice teachers who engaged in a service-learning experience in a teacher preparation course as compared to when preservice teachers did not? (2) Are there significant differences in reported gains of efficacy when comparing gains associated with the courses across semesters?

Results indicate that there were significant gains in personal efficacy ( $F(1) = 7.53, p = .013$ ) and teacher efficacy ( $F(1) = 4.61, p = .046$ ) for the service-learning course when compared to the non service-learning course (see Table 1 and Table 2). As stated previously, the analysis of the data also accounted for differences in initial levels of efficacy at the outset of a course, making it possible to consider efficacy gains within a course, regardless of differing levels of efficacy each student had upon entering either course. Results also indicate that there were not significant differences in gains in efficacy when comparing courses across time, or semesters. Regardless of which semester the service-learning project took place, gains in efficacy were consistent in the

way pre-service teachers reported personal efficacy ( $F(5) = 1.92, p = .172$ ) and teacher efficacy ( $F(5) = 1.60, p = .242$ ) scores (see Table 2). This finding suggests that each of the semesters of service-learning projects were similar in regard to preservice teachers' reported gains in efficacy. Even though projects differed, factors that unified projects seemed to lead to gains in efficacy.

**Table 1**

*Personal Efficacy and Teacher Efficacy Scores of Service-Learning and Non Service-Learning Courses*

	<i>N</i>	<i>Pre-Test Mean</i>	<i>Std. Deviation</i>	<i>Post-Test Mean</i>	<i>Std. Deviation</i>	<i>Mean Difference</i>
PE – SL	76	44.72	6.50	46.41	5.24	1.69*
PE – Non SL	76	45.28	7.37	45.41	6.89	0.13
TE – SL	76	39.43	6.11	40.86	6.15	1.43*
TE – Non SL	76	38.34	5.96	38.56	6.67	0.22

PE = Personal Efficacy Scale; TE = Teacher Efficacy Scale

SL = Service-Learning Course; Non SL = Non Service-Learning Course

\* Significant difference at  $p < .05$  level

**Table 2**

*Efficacy Effects of Course Type and Time Factors*

	<i>df</i>	<i>F</i>	<i>p</i>
PE			
Course Type (SL to Non SL)	1	7.53	.013*
Time (Semesters)	5	1.92	.172
TE			
Course Type (SL to Non SL)	1	4.61	.046*
Time (Semesters)	5	1.60	.242

PE = Personal Efficacy Scale; TE = Teacher Efficacy Scale

SL = Service-Learning Course; Non SL = Non Service-Learning Course

\* Significant difference at  $p < .05$  level

## Qualitative

Through written reflections, preservice teachers' shared their perceptions of their participation in a service-learning project. Analysis of the written reflections yielded themes that provide a basis for addressing the first research question: How do service-learning experiences seem to foster preservice teachers' sense of efficacy? Examining the themes along with examining the characteristics of the service-learning experience provided a basis for addressing the second research question: What factors seem to play a role in regard to service-learning experiences fostering a sense of efficacy? Factors that the data analysis uncovered follow here.

**The Service-Learning Experience.** One theme that emerged relates to the nature of the type of service-learning experience. That is, the service-learning provided authentic teaching and learning experiences. These authentic experiences were basic because the nature of these experiences enhanced preservice teachers' engagement, which afforded benefits that the preservice teachers perceived. As this student explains, the authentic nature of the service-learning experience provided a challenging, but rewarding learning experience in calling for immediate application of course content that is akin to the demands the preservice teachers would face eventually as teachers:

At first we all had resistance to the project. We wanted a traditional college setting with a syllabus that said we are taking a test on this date and this is what we have to do to pass the class. But soon after the project planning started, I realized that in a year I'm not going to have a syllabus to follow . . . I think we are better prepared to go into the real world as a result of the authentic experience we got teaching kids.

The preservice teachers also mentioned learning about the importance of effective planning in connection to their growth as a teacher, such as the following reflection shows:

I didn't realize how much preparation time goes into a project like this. Day by day I saw it come together, and it was like magic when we were prepping the final steps. You just knew everything was ready to go, and it would be successful. We were prepared!

**Community of Learners.** Another theme was that the service-learning project created a community of learners, enhancing individual engagement and learning. The community that preservice teachers discussed consisted not only of their colleagues in the course but also the children who would participate. As discussed previously, the preservice teachers worked as a team on a project, and they received formative feedback from colleagues in the course through class meetings. Additionally, the children's presence was felt even before the preservice teachers worked with the children because knowing the

project was for real children provided a catalyst for engagement. As this preservice teacher's comments reveal, the service-learning project was daunting because of the demands and what was at stake, yet the children provided incentive, and colleagues provided collaboration:

To me this class was a lot like climbing Mount Everest. The mountain is big and risky . . . Busy work, excuses, and tests will not get you to the top of that mountain, but a real-life project working with kids forces you to find a way to make it work. We all had to rely on each other, take a leap of faith, and allow those people around us to help push us to the top.

The relationships with the community partners, the children, continued to play a role in the preservice teachers' growth. Through the opportunity to work with the children, the preservice teachers began to see teaching as caring. One preservice teacher put it this way:

Being a PE teacher is more than just rules and instructions . . . It's about caring for the future of youngsters and wanting them to be successful in life. . . . It felt really good to be asked repeatedly when we were coming back, and it was clear that they were very appreciative of what we did for them. They really loved us and looked up to us as role models.

**Emotional Factors.** The preservice teachers' perceptions showed that emotions were an inextricable part of their gains as preservice teachers throughout the service-learning experience. As shown in the previous comments, the preservice teachers initially "had resistance to the project." and did not want to engage in the service-learning which represented a new type of learning experience for them in their teacher preparation program. However, the preservice teachers became motivated as they realized that the development of their project was for children, not solely a class assignment. Feelings also changed as students worked as team in planning, with team members knowing that their contributions were important for the team as well as for the children. Working as a team was necessary for developing and implementing the project because of the dimensions of planning and number of children involved. The collaboration made it possible for preservice teachers to gain reassurance from working together with

peers which replaced initial reluctance and anxiety. Confidence and excitement came from the seeing the project develop, a project that initially represented many unknowns.

Emotional connections also came about through working with the children. Once the preservice teachers worked with the children they again saw how their dedication mattered because the children valued their teaching. These emotional connections underscored for the preservice teachers that they could contribute to children's lives and that caring is a necessary part of effective teaching.

## **Discussion**

The results of the quantitative analysis are encouraging in providing support for service-learning in teacher preparation. The results also indicate that individual differences among the service-learning projects that took place during semesters were not associated with different gains in efficacy. Even though the service-learning projects were different, even in regard to how long they took place (e.g., one day as compared to a weekend), certain attributes that unified these projects seemed to contribute to consistent gains in efficacy.

The findings of the qualitative analysis help uncover why all of these various service-learning experiences fostered a sense of efficacy. The findings indicate that certain factors play a role when service-learning experiences foster a sense of efficacy, and these factors can be understood in view of Bandura's four sources of efficacy. The service-learning project yielded multiple concrete and complex experiences, akin to what preservice teachers would be expected to accomplish as teachers. This type of learning was new to the preservice teachers, and initially, many felt reluctant and/or apprehensive. However, the nature of the participation in the service-learning experiences fostered engagement and confidence. Preservice teachers knew that team members and children were counting on them. Through the "scaffolding" they received from class meetings and collaboration, preservice teachers were able to overcome obstacles. The significance of being a teacher reached new heights as preservice teachers worked closely with students, making it possible to know students as individuals and care about them. Responses of students validated the importance of the preservice teachers' hard work. The service-learning

ing experiences that preservice teachers had conceptualized, planned, and implemented for children were successful. In other words, the preservice teachers had “ownership” of real teaching, and their efforts were supported, making it possible for them to succeed. Because the preservice teachers felt that much was at stake in working with the students, their success was meaningful.

Bandura stresses the importance of mastery experiences such as these. These service-learning projects also could be sources of efficacy beliefs because collaboration provided vicarious experiences, where preservice teachers saw their peers engage and succeed at various points. Social persuasion could take place implicitly, if not explicitly, as peers/team members assigned responsibilities or asked for assistance, telling/”telling team members they could succeed while ensuring they could. As indicated previously, emotional dimensions of these service-learning experiences played an integral role in fostering a sense of efficacy.

### Limitations and Conclusions

Fostering preservice teachers’ sense of efficacy is critical. Although the notion of fostering efficacy beliefs is not new, much remains to be done, and efforts to enhance efficacy can be elusive through relying upon traditional coursework. This research supports findings of previous studies which indicate that prospective teachers are more likely to experience gains in efficacy when course instruction supports their service-learning experiences (Root, Callahan, & Sepanski, 2002; Wasserman, 2009). The prospective teachers of this study received support throughout the service-learning experience. At the outset, the instructor communicated closely with community partners which paved the way. Course learning experiences included not only support through learning content about curriculum models but also support for planning and implementation, where content was applied through the service-learning projects.

This research also makes strides in other ways in uncovering how service-learning experiences can foster efficacy beliefs. These findings indicate that service-learning projects do not foster efficacy invariably. Rather, these findings suggest that an array of interdependent factors can play a role. Thus, although these service-learning projects consistently fostered efficacy, even similar projects might not

foster efficacy to a similar extent if attributes of the experience worked against fostering efficacy. For example, perhaps service-learning would not foster substantial gains in efficacy if preservice teachers did not have the opportunity to have ownership and investment because of their lack of involvement in planning, instances where emotional factors could matter. Gains in efficacy might not take place if the instructor had not planned with the community partners from the outset or if communication had faltered as the project was underway, which could have lead to frustration or lack of success in the projects the teacher candidates developed and implemented. As suggested previously, substantial gains in efficacy also could have suffered if the teacher candidates had not experienced the support of the class meetings and working as a team, whereby they received feedback in developing and implementing successful project. In other words, the authentic projects as well as the ensuing support seemed to foster increases in efficacy beliefs; the preservice teachers were able to see themselves as successful teachers who had overcome initial doubts in implementing a major project for children, thereby making gains in their efficacy beliefs.

A limitation of this study is that we did not use a control group. Using a control group would make it possible to document whether the preservice teachers enrolled in the service-learning course would experience gains in personal and teacher efficacy even though they did not engage in service-learning. Our research has not used a control group within a given semester because the enrollment patterns of the teacher preparation program do not make that feasible. However, as discussed previously in this article, a similar, previous study of our research (Nelson, Tice & Theriot, 2008) also found that preservice teachers experienced statistically significant gains in efficacy when they participated in service-learning, but those same preservice teachers did not experience these substantial gains in efficacy when they did not experience service-learning. In this study, we have added a qualitative component and compared gains in personal and teaching efficacy of individual students when they took a course that incorporated service-learning and during a course they did not. Again, we have found that the students experienced statistically significant gains in efficacy when they

participated in service-learning, regardless of the semester under consideration.

As we have discussed, the quantitative data analysis accounted for some of the initial variance between at the outset of a course, making it possible to consider efficacy gains within a course, regardless of differing levels of efficacy each student had upon entering either course. However, all of the gains in efficacy may not be accounted for by the participation in service-learning because the non-service-learning course preceded the service-learning course in the program of study. In other words, the preservice teachers could have gained in efficacy through the previous pedagogy course, and those gains could have contributed to the gains shown the service-learning course as unaccounted for variance. Nevertheless, the findings of these two studies along with subsequent studies are consistent in showing that the preservice teachers experienced a statistically significant gain in efficacy beliefs when they participated in the type of service-learning project of the course, regardless of the semester under consideration.

Although this research has shown how service-learning experiences can foster efficacy beliefs, the potential of service-learning is not diminished necessarily when a study does not show statistically significant findings. As shown in the research of Root, Callahan, and Sepanski, (2002), preservice teachers can have high levels of efficacy beliefs when they begin a project so gains in efficacy may not reach statistical significance. Additionally, our measures for documenting efficacy beliefs may not capture all gains in efficacy beliefs that are indicated in other ways.

A limitation of the scope of this research is that findings do not show how much these gains in efficacy are sustained as the preservice teachers proceed during their student teaching and first year(s) of teaching. This service-learning component provided a special type of field or practicum experience, as is often characteristic of service-learning in that preservice teachers make decisions about teaching that are guided and informed, these decisions nevertheless require preservice teachers to rely upon their own resourcefulness. When working in traditional practicums or student teaching, preservice teachers' decisions often are based mostly upon what the mentor teacher does. Our research to date does not show

how these gains in efficacy beliefs can be maintained, yet knowing how is critical. Knowing how these gains in efficacy beliefs can help preservice teachers face future challenges also merits documentation.

What these findings do indicate is how service-learning can be promising in preparing teachers. Understanding factors that play a role in fostering efficacy can guide planning service-learning experiences, regardless of the area of teacher education. This research also underscores that preservice teachers need to be immersed in learning experiences that go beyond memorization and "dummy runs" so that preservice teachers are prepared and feel prepared.

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