

# Construction and Practice of Quality Standards for Chemistry Education Major Students' Internship in the Context of New Normal Education

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**Abstract:** Educational internship is both an important way to transform theoretical knowledge of chemistry education majors into educational teaching ability and an important and indispensable link to improve their teacher quality. Evaluation of educational internship is an important part of guaranteeing the quality of educational internship, but at present, there are problems in the evaluation of educational internship of chemistry education majors such as vague evaluation standards, deviated evaluation contents, lack of operability, and the evaluation results cannot truly and objectively reflect the students' internship situation. In view of the problems in the evaluation of chemistry education internship, the evaluation criteria of education internship of chemistry education majors were constructed on the basis of practice from 3 dimensions of teacher morality and professional affection, education and teaching ability, education and teaching research, 5 primary indicators of teacher morality, professional affection, teaching ability, head teacher work and education investigation and 47 secondary indicators. The evaluation content is enriched, the evaluation index price is refined, and the combination of qualitative and quantitative is realized.

**Keywords:** evaluation criteria; educational internship; chemistry education major; construction and practice, new normal education

## 1. Introduction

Internship is one of the important ways for chemistry education majors to transform their theoretical knowledge into educational teaching ability, and it is also a necessary way for chemistry education majors to grow into secondary school chemistry teachers. Therefore, administrators, experts and scholars of chemistry education majors in higher teacher training colleges and universities have always attached great importance to students' educational internship work, and have conducted long-term and extensive research and practice at both theoretical and practical levels, and have also achieved fruitful results and accumulated many valuable experiences. However, in the context of the new normal

education, we re-examine the educational internship of chemistry education students and find that the educational internship of chemistry education students still has problems that need further research and practice, such as the general and vague objectives of educational internship, the lack of quality standards of internship, the urgent need for scientific and standardized evaluation of internship, the single content and form of internship, the weak guidance of internship, the lack of institutional guarantee for internship management and financial investment, etc. [1], especially the lack of standard requirements for the educational teaching ability of chemistry education majors, resulting in the lack of clarity of practical input and performance assessment in the process of students' educational internship, which is bound to affect the quality of educational internship and the training of future secondary school chemistry teachers.

## 2. Connotation of New Normal Education

In 2018, the State Council promulgated the Opinions on Comprehensively Deepening the Reform of Teacher Training in a New Era [2], which clearly proposed to strengthen teachers' moral construction and professional quality and ability training, build a high-quality professional and innovative teacher team, and implement the moral education; Subsequently, the Ministry of Education promulgated the Action Plan for the Revitalization of Teacher Education (2018-2022), which proposes to "improve the quality of teacher education as the core, supported by strengthening the construction of the teacher education system", "run a number of high-level, distinctive teacher education institutions and teacher training programs, and basically improve the teacher training system, so as to lay a solid foundation for the long-term sustainable development of teacher education in China" [3]; In particular, Chinese leader proposed at the National Education Conference "to adhere to the priority development of education as an important first move to promote the development of the State, and constantly make education with the State career development requirements, with the people's expectations fit, with China's comprehensive national

strength and international status to match" [4]. The important speech of Chinese leader and the important documents on education development promulgated by the state marked a new period of development for teacher education in China. The concept of "new normal education" indicates that China's education has entered a new period of development, and also aims to solve the new problems faced by teacher education in this new period of development and to reform and innovate the teacher education system [5]. Compared with the "old normal education", the new normal education, firstly, attaches more importance to the construction of teacher morality; secondly, the training target is from teacher training students → teacher training students and in-service teachers, and the focus is from teacher education → teacher education, characterized by the relatively closed → united, top-down → inside-out, and the nature from closed and stage → open and lifelong. Thirdly, the new normal education is a high-level education; Fourthly, the new normal education is an education with a sound quality assurance system and professional standards.

### 3. Problems in the Evaluation of Chemistry Education Students' Internship in the Context of New Normal Education

At present, the educational internship of chemistry education majors generally has the following problems: First, the objectives of the students' educational internship are not clearly defined, and the objectives only stay at the level of "theoretical application" [6]. Secondly, there is a lack of standard requirements for students' educational teaching ability in educational internship [7], and the evaluation only stays at the level of the number of classes taught by students, neglecting the cultivation of students' teacher moral and experience and teaching research ability. Third, the evaluation of students' educational internship lacks specific and clear evaluation criteria, emphasizing form over substance and subjective and arbitrary [8]. Fourth, the evaluation subject is single. It is mainly the internship school instructors or university instructors who evaluate students and internship students themselves are less involved [9]. In the evaluation process, schools and instructors do not strictly assume the responsibilities of evaluation subjects and fail to make objective, scientific, fair and comprehensive assessment and evaluation according to the work performance of internship students, and the purpose of evaluation is to help students complete their "internship tasks" [10], and the evaluation result is that all internship students pass with "excellent".

#### 3.1. Incomplete Evaluation Content

Educational internship is not only an essential way to cultivate students' moral cultivation and improve their educational teaching ability, but also an important opportunity to comprehensively test the training quality of chemistry education majors. Therefore, the evaluation of educational internship should not only assess students' educational teaching ability and educational teaching

quality, but also assess and evaluate students' teacher moral cultivation. The reality is that the current education internship evaluation only focuses on students' teaching ability, but ignores "teacher morality".

#### 3.2. Ambiguous Evaluation Criteria and Lack of Operability

At present, most normal colleges and universities evaluate students' educational internship in three dimensions: students' educational teaching work, head teacher work and educational investigation, and although the assessment levels, assessment contents and assessment standards of each item are determined, they are vague and lack operability. For example, in the evaluation of teaching work in the workbook of a normal college for chemistry education students, the "teaching plan" is divided into five grades: excellent, good, medium, pass and fail, but there is a large space of mobility between the five grades, and the key words are not specifically defined, only "complete teaching plan" is mentioned. How is a lesson plan complete? What are the indicators? What are the criteria for the quality of lesson plans? Another example is "careful lesson preparation", but what indicators are used to measure "careful"? There are no specific regulations and explanations.

#### 3.3. Unreasonable Evaluation Method

At present, the evaluation of chemistry education students' internship generally involves three parts: teaching, head teacher work and education and teaching investigation, and the actual operation is mainly done by the supervisors of the internship schools. The analysis shows that most of the instructors conclusively evaluate the overall performance of the internship students during the internship period, and the evaluation conclusions are generally described according to the following aspects: in terms of internship attitude, whether they prepare lessons carefully and correct homework on time; in terms of classroom teaching ability, whether the teaching attitude is natural and generous, whether the basic skills such as Putonghua, board writing and demonstration experiments are solid and how effective the teaching is; in terms of head teacher ability, whether they can assist the teacher to carry out specific work [11]. The evaluation method is mainly qualitative evaluation, and there is little or no quantitative evaluation. The evaluation results are highly subjective or arbitrary, and cannot truly reflect the effect of educational internship, let alone study the changes of internship students before and after internship from the perspective of data comparison.

#### 3.4. Single Evaluation Subject

Evaluation is one of the important means to monitor and assess the results of internship students in the process of educational internship, and its evaluation results should not only reflect students' internship effects scientifically, objectively, fairly and comprehensively, but also lay the foundation for further improving the quality of educational internship, and provide reference

for universities, educational management departments and primary and secondary schools to select secondary school chemistry teachers. In order to achieve the objective and fair evaluation goal, the evaluation of internship students should be multi-participation and multi evaluation. However, the reality is that the evaluation of education internship of chemistry education students in most colleges and universities is mainly conducted by internship school instructors and internship leading teachers, while local education management departments, relevant management departments of internship bases, internship student groups, internship students themselves and relevant departments of colleges and universities are rarely or even not involved, and the lack of evaluation subjects makes it difficult to ensure the evaluation results are objective, fair and Accuracy. Although the internship school instructors spend a long time with the internship students during the internship process, because the internship school instructors are generally responsible for heavy educational and teaching tasks and have different concerns for the internship students, the internship school instructors focus on the acquisition of classroom teaching skills and the improvement of classroom management ability, while they pay attention to the internship students' internship cognition, internship attitude, career aspiration and professional identity. As a result, they are unable to make a comprehensive evaluation of the internship students objectively; while the teachers in charge of the internship in colleges and universities have limited energy and time due to the large number of internship sites under their management, and their understanding of the internship process of each internship student is not comprehensive, which leads to the problem of subjective evaluation of the educational internship.

#### **4. Structure of Chemistry Education Students' Literacy in the Context of New Normal Education**

The necessary literacy of chemistry education majors before their educational internship makes them the foundation for their educational internship and one of the prerequisites for becoming a qualified secondary school chemistry teacher in the future. From the perspective of the growth of chemistry teachers and the requirements of basic education for future chemistry teachers, the literacy of chemistry education majors consists of three dimensions: Teacher moralities and professionalism, professional knowledge, and professional skills.

##### **4.1. Teacher Morality and Professionalism**

Teacher moralities are the moral qualities and behavioral norms that teachers should possess and follow. They are the moral norms and codes of conduct that normal school students must abide by in their educational and teaching activities, as well as the moral concepts, sentiments and qualities that are compatible with them. Among them, correct political concepts and values are the fundamentals of Teacher moralities for chemical education students, strong sense of

responsibility and love for education are the core of Teacher moralities for chemical education students, and strict self-discipline in words and deeds is the soul of Teacher moralities for chemical education students.

Professionalism is the special emotion that normal school students have lasting for education, including their identification with education and educational ideals. The professionalism of chemical education majors is divided into four dimensions: ideal, sentiment, aptitude and self. Professional ideal is a kind of aspiration and pursuit for students to engage in chemistry education and teaching, which is in essence a noble professional ethical concept and professional ethical spirit, and is the soul of students' chemistry education and teaching; professional sentiment is the emotional experience of students' rational value evaluation of chemistry education and teaching, and is an important factor for students to form the basis of teachers' values and become excellent chemistry teachers' personalities in the future [12]; professional aptitude professionalism is the students' personality tendency to engage in chemistry education and teaching; professional self is the students' psychological activity of encouraging and affirming their own educational and teaching achievements from their hearts in the process of chemistry education and teaching practice activities [12].

##### **4.2. Professional Knowledge**

Building a reasonable knowledge system is the most essential element for the growth of chemistry education students and the primary condition for future secondary school chemistry teachers to accomplish their teaching tasks. In the perspective of new normal education, the knowledge structure of students majoring in chemistry education contains:

Ontological knowledge, including professional knowledge of chemistry subjects, basic knowledge of science and culture and knowledge of related subject areas, which belongs to the most basic knowledge for chemistry education majors to engage in education and teaching work.

Conditional knowledge, including knowledge of educational sciences, knowledge of psychological sciences, knowledge of chemistry curriculum and knowledge of chemistry teaching, which belongs to both an important part of the knowledge structure of chemistry education students themselves and a guarantee that they can be successful in the process of their educational internship [13].

Strategic knowledge, including knowledge of educational technology, knowledge of teaching strategies and knowledge of learning strategies, belongs to students' knowledge of dealing with and solving specific problems in specific chemistry education teaching situations and directly affects the strength and level of students' chemistry education teaching abilities.

Practical knowledge, which is the accumulation of students' personal experience in the practice of chemistry education teaching, is both empirical and practical.

##### **4.3. Professional Skills**

The professional skills of chemistry education majors generally include basic chemistry teaching ability and self-development ability. The basic competence of chemistry teaching includes the formulation of chemistry teaching plan, the planning of chemistry teaching objectives, the selection of chemistry teaching strategies and methods, the design and implementation of chemistry teaching, and the evaluation of chemistry teaching effectiveness, etc. The self-development competence includes the ability of independent learning, self-reflection and professional development, etc.

### 5. Construction of Quality Standards of Internship for Chemistry Education Students in the Context of New Normal Education

Constructing and improving the internship quality standard is the premise of guaranteeing the internship quality of chemistry education majors, and it is also an important initiative to build a high-quality teacher training team in the context of new normal education. According to the educational internship objectives of chemistry education majors, the educational internship quality standards of chemistry education majors are shown in Table 1.

**Table 1.** Quality standards of internship for chemistry education students

Evaluation dimensions	Primary indicators and weights	Secondary indicators	Assignment	Total
Teacher morality and professionalism	Teacher moralities and style T1(0.25)	The internship process does not have the dissemination of statements and topics that are contrary to the national education policy and the code of teacher moralities	20	100
		There is no dissemination of remarks in the teaching content that are contrary to the national line policy, organization and ruling discipline	20	
		No violation of school discipline and school rules	10	
		No corporal punishment or disguised corporal punishment of students	10	
		No criticism of students with insulting language	10	
		Be able to properly handle the relationship with students and their parents	10	
		Be able to reasonably express their demands during the internship and not have illegal gatherings or petitions	10	
	Professionalism T2 (0.15)	Dress appropriately (not wear clothing that does not meet the requirements of the teaching profession)	10	100
		Passionate about education, passionate about education internship	10	
		Love internship school and internship work	10	
		Treat every student equally and take the initiative to care for the students with difficulties	10	
		Have a sense of teamwork, can correctly handle the relationship with the internship instructor and team members, and can correctly face the difficulties and honors encountered in the internship process	10	
		Full attendance in the internship process (1 point for 1 day of leave, 2 points for 1 absenteeism, no points if the leave exceeds 1/3 days of the actual internship or 1 week of absenteeism)	10	
		Listen to the instructor's opinion and take the initiative to seek advice from the instructor	15	
		Adequate preparation for teaching (complete teaching documents for each section)	5	
		Proactively cooperate with the instructor to complete relevant work	15	
		Actively participate in teaching and research activities	5	
		Listen to the school and the instructor's other work arrangements	5	
		Passionate about education, passionate about education internship	5	
Education and teaching practice	Teaching T3 (0.30)	Reasonable setting of teaching objectives	10	100
		Highlighting key points and breaking through difficult points appropriately	8	
		No errors or major omissions in teaching content	10	
		The layout of the board book is reasonable, beautiful, moderate font size and clear	6	
		Standard Mandarin, fluent language, moderate speed, no obvious mantra, accurate expression	10	
		The teaching process is compact, natural, with reasonable time allocation	7	
		Clear thinking, scientific explanation, inspiring, and standardized demonstration experiments	8	
		Active classroom atmosphere and good classroom discipline	5	

		Pay attention to all students and be able to find and solve students' problems	8	100
		Full of spirit, infectious, natural and generous teaching attitude	5	
		Lesson introduction is natural, lesson conclusion is reasonable	5	
		Appropriate choice of teaching methods	8	
		Reasonable use of plates, prints and modern information technology to assist teaching	5	
		The teaching effect can basically achieve the teaching objectives	5	
	Work of head teacher T4 (0.20)	Be able to detect student disciplinary cases in a timely manner	12	
		Be able to actively participate in the daily work of the class	13	
		Be able to handle daily class affairs in a timely manner	15	
		Be familiar with the class situation	15	
		Be able to cooperate with the head teacher to complete relevant work	13	
		Not be absent in class management	10	
		Be able to conduct thematic class meetings independently	15	
Education and teaching research	Education survey T5 (0.10)	Questions are derived from actual problems in educational internships	10	
		Comprehensive, objective, accurate materials and reliable data	20	
		Reasonable structure, clear and logical presentation	25	
		Clear views, sufficient arguments, strong persuasive power	25	
		The conclusions are correct and the suggestions are practical and feasible after being reviewed by the leaders of the internship unit	20	

On the day when the internship students enter the internship school, the evaluation forms will be submitted to the internship school separately by the lead teachers of the higher normal colleges and schools, and the relevant leaders of the internship school will convene the internship instructors, the head teachers of the internship classes and the lead teachers of the higher education institutions to explain the evaluation requirements of the internship in a unified manner. Among them, Teacher moralities (T1 and T2) will be evaluated by the leaders of the internship school and the internship supervisors, and the average grade will be taken; teaching work in education and teaching practice (T3) will be evaluated by three parties: course supervisors, student representatives of the teaching class and the internship group, among which 70% of the grade of course supervisors, 10% of the grade of student representatives of the teaching class and 20% of the grade of the internship group; the work of the head teacher (T4) is evaluated by the grade level director, the former head teacher and the classroom student representative, with 30% of the grade level director's grade, 50% of the former head teacher's grade and 20% of the classroom student representative's grade; the educational investigation in educational teaching research (T5) is evaluated by the leaders of the internship school and the leading teachers of the university, the internship school leaders' grade accounts for 60% and the internship leading teachers' grade accounts for 40%. Total grade of educational internship (S) =  $T1 \times 0.25 + T2 \times 0.15 + T3 \times 0.30 + T4 \times 0.20 + T5 \times 0.10$ , of which,  $S \geq 90$  is excellent,  $89 \leq S \leq 80$  is good,  $79 \leq S \leq 70$  is medium,  $69 \leq S \leq 60$  is qualified, below 60 is unqualified, for the unqualified students, retake with the next grade students.

### 6. Effectiveness of the Practice Quality Standard of Internship for Chemistry Education Students

The evaluation standard was practiced in the 2015-2017 class with good results, and the students who

passed the educational internship had both solid theoretical skills and corresponding practical experience in chemistry teaching and relatively proficient teaching skills, which comprehensively improved the training quality of chemistry education students, and the excellent rate of each student in the comprehensive ability demonstration of teaching ability organized by the school reached 56% and showed an upward trend; For example, 73 students won awards in various teaching skills organized outside the university, such as 16 students won awards in the 9th "Huawen Cup" National Normal Students "Chemistry Teaching Design", "Chemistry Teaching Skills" and "Excellent Essay Competition"; 4 students won the first prize, 12 students won the second prize and 18 students won the third prize in the Guyuan City Teaching Skills Competition; 3 students won the first prize, 8 students won the second prize and 12 students won the third prize in the Region-wide College Teaching Skills Competition. The average passing rate in the first interview in teacher qualification is 83.6%.

### 7. Summary

In conclusion, under the situation of the new normal education, the reform of normal education is in continuous progress, the educational internship of chemistry education students in higher normal colleges and universities is also being improved and strengthened, and the evaluation standard of students' educational internship is also being explored and improved, but it is undeniable that the educational internship work involves a wide range of aspects and many links, and the evaluation of educational internship is a complex and dynamic change, and the evaluation standard of educational internship cannot It is impossible for the evaluation criteria of educational internship to remain unchanged, and the content and methods of evaluation will keep pace with the needs of future chemistry teachers under the reform of basic education. This

requires the peers and experts of chemistry education majors in higher normal colleges and universities to continuously supplement, improve and perfect the evaluation criteria of educational internship to continuously improve the quality of educational internship of chemistry education majors, and then improve the quality of excellence in secondary school chemistry education training.

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