Research on the Mechanism of Critical Incidents in Influencing the Development of Professionalism of Student Teachers

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Abstract. Critical incidents of educational practice are the functional incidents experienced by student teachers during the internship period which have profound influence on their own education concepts and education behaviors. Through the qualitative research, the paper explores the mechanism of critical incidents in affecting student teachers. The results show that critical incidents initiate the internal processing of student teachers’ “cognition and understanding”, “conflict and judgment”, “decision and behavior” and “reflection and construction”, which supports their professional development of “knowledge and experience”, “ability and method”, “thinking and strategy” and “attitude and philosophy”.

Introduction
In recent years, the exploration of critical incidents in teaching, as well as the study of the mechanism, has become an effective approach to conduct student teachers’ training, [1] enhance teachers’ teaching and research ability, promote school-based training and research, [3] and improve classroom teaching quality. [4] However, existing research on critical incidents mainly focuses on after-occupational professional development of teachers and classroom teaching improvement of schools, rarely referring to the field of pre-service teacher education. During the internship, the experience and creation of critical incidents deeply influence student teachers’ professional development in many aspects, such as educational concept, occupational belief, professional emotion and teaching practice, etc. For this purpose, based on the qualitative analysis of critical incidents to track the internship process of student teachers, this paper helps to optimize the organization and implementation of educational practice, providing a referential function for high-quality and high-efficiency professional development.

Critical Incidents in Education Practice
An incident is something unusual or important that happens in history or in real life, and it usually includes several elements such as time, place, character, behavior, cause and effect. Human behaviors are very important, without which incidents are nothing but tantamount to natural phenomena lacking some emotional, intellectual, valuable and memorable contents. [6] Therefore, people are the key to the composition of incidents. The identification of an incident is people-oriented with objective, historical and factual characteristics because of the implied logical thinking and value judgments. A critical incident has great influence on people’s cognition and behaviors. And the reason is that it can lead to their deep understanding and critical reflection of the nature and effects of the incident, thus to form the subjective construction of it. Moreover, it affects people’s cognition, resulting in their external behaviors. Critical incidents were first applied to educational research abroad in the 1980s, [7] and after the systematic and in-depth research of David Tripp in his book Critical Incidents in Teaching: Developing Professional Judgement, critical incidents have become hot topics in the research field of teacher education, increasingly academic concern. [8]

For teachers, critical incidents refer to those that can reinforce the original educational cognitive structure or cause the original educational cognitive conflict, which can be a complete event process,
or an important piece, or a detail that cannot be ignored, often lead to decisive influence on the teachers’ professional development and team teaching effectiveness. [9] However, in the internship period, critical incidents have great influence on the educational concepts and behaviors of student teachers, experienced in the complex educational environment of interaction with students, guidance teachers, textbooks and classroom teaching. At the same time, critical incidents strengthen the original educational cognition of student teachers, which promote their professional decision-making as well as professional development through practical reflection. To have an educational significance for the professional development, student teachers should reflect on critical incidents on the basis of their analysis and interpretation, and form value judgments and value choices. Meanwhile, they can extract meaningful information of the incidents to make internal processing and transformation, thus to reconstruct the cognitive structure with the combination of the original cognition, which ultimately influences and guides their own professional practice.

**Research Design and Research Process**

*Research Objects and Data Collection*

This research follows the principle of student teachers’ autonomous participation, and 350 student teachers of Grade 2011 and Grade 2012 in Normal University are selected twice in 2014 and 2015 as volunteers, who daily record critical incidents as the data collection tool of semi-structured questionnaire survey. Among them, 150 volunteers are selected in the Grade 2011 normal students and 200 volunteers are selected in the Grade 2012, a total of 350 people but not limited to subject or gender.

The record manual, a record of 80 days of critical incidents, is designed by the researcher and provided to the volunteer student teachers. It has the instruction of “Daily record an incident that has the primary influence on your own internship life”, and the contents contain three primary parts entitled “brief description”, “feelings and evaluation” and “reflection and revelation”, as well as six columns of natural information to fill in including name, gender, subject, student number, date and location. The whole research process strictly follows the ethical and humanistic nature of the research. [10] It is supplemented by four university teachers and three education-research doctors to track the practice in order to obtain the research experience in the real situation. Besides, observation, interviews, situational records and other methods are used to collect objective and reliable first-hand research data, supporting for the further development of this research.

*Research Process and Data Analysis*

This research is conducted in two phases. The first internship period of Grade 2011 students is from September 3rd to October 30th, 2014, lasting 58 days, and 87 record manuals are collected at the end of the internship, a total of 1653 incidents, 19 per student. The second internship period of Grade 2012 students is from September 1st to October 30th, 2015, lasting 60 days, and 142 record manuals are collected at the end of the internship, a total of 3287 incidents, 23.2 per student. In addition, according to the gender of student teachers, the total of 229 record manuals are classified as 46 male teachers and 183 female teachers. While according to the professional division, 47 student teachers in maths, 42 in Chinese, 36 in English, 28 in physics, 23 in history, 22 in biology, 13 in chemistry, 11 in primary education, 4 in geography, 3 in physical education. In the early stage of data analysis, the researchers extensively collect relevant literature and existing research results, formulate research plans, design research methods, and plan research process. In the course of organizing the data, the researchers use the methods of text analysis, word frequency statistics, classification and coding to conduct qualitative research on the critical incidents recorded by student teachers. The recorded “brief description” of the incidents are classified under different standards of type division. Based on “feelings and evaluation”, the researchers obtain some key information which benefits the professional development of student teachers, thus to analyze the impact of critical incidents on their professional knowledge, practical ability and professional emotion, etc. According to the recorded
“reflection and revelation”, the researchers understand the psychological cognition and investigate the positive effects of critical incidents on the internal thinking and external behavior of student teachers. Hence, this research reveals the general characteristics of student teachers in the records of critical incidents, and helps to explore the regularity of the development of professionalism of them. in addition, supplemented by the researchers’ observation and interviews to collect the research data, it also clarifies the value of critical incidents that influence student teachers’ professional development.

**Mechanism of Critical Incidents in Influencing the Professional Development of Student Teachers**

Adopting the method of qualitative research, the paper explores the mechanism of critical incidents in influencing the professional development of student teachers. On one hand, the records and interviews contribute to confirming the key points and incidents. On the other hand, the thinking and logic presented in "feelings and evaluation", "thinking and revelation" and interviews helps to clarify the cognitive process of critical incidents of student teachers, which can further reveal the mechanism of critical incidents in influencing their professional development.

**Connotation and Hierarchical Structure of Professional Development of Student Teachers**

The ultimate goal of education practice is the development of professionalism of student teachers, including professional knowledge, practical ability, mode of thinking, professional emotion related to teaching and education. Using this as a starting point, education practice should not only achieve the integration of theoretical knowledge and educational experience, but also promote student teachers as knowledgeable, capable, emotional, intelligent, cultivated and competent professionals at the same time. Therefore, based on this professional requirement and training object, combined with the analysis results of critical incidents records and supplemented by the opinions in the interview, the construction of the development of professionalism of student teachers can be divided into four levels, including “knowledge and experience”, “ability and method”, “thinking and strategy” and “attitude and philosophy”, as shown in Figure 1.

“Knowledge and experience” at the bottom refers to the professional knowledge and intuitive experience gained by student teachers in the education practice during the internship period, which is also the basic knowledge and experience in teaching profession to initiate the education practice. It is the basis of the other three levels, including professional knowledge such as theoretical knowledge, practical knowledge, empirical knowledge and silent knowledge, etc.

“Ability and method” refers to the improvement of professional ability and perfection of method system after student teachers command the knowledge and experience. It is the further transformation and application of the first level, which can be explicit in the specific professional practice. And in the consolidation and increase of knowledge and experience, the second level of “ability and method” develop accordingly.

“Thinking and strategy” is the higher level of professional development of student teachers. After knowledge and experience is obtained, it is processed and transformed into professional ability and teaching method through education practice. In this process, student teachers get the development of cognitive thinking, multiplication of teaching strategy and integrity of practical wisdom. What’s more, the process is also the development of abstract thinking and cognitive ability by summarizing and enhancing the specific professional practice of student teachers. And furthermore, the development of “thinking and strategy” can be applied to the practice of student teachers in reverse, which plays a leading role in their acquiring knowledge, accumulating experience, improving ability and perfecting method.

“Attitude and philosophy” is the fourth level of student teachers’ professional development. It refers to relatively stable views of education, students, values and professionalism, which are formed by experience, cognition, reflection, internalization, construction and other processes on the basis of the first three levels. In fact, “attitude and philosophy” embodies the subjective cognition of student teachers in education practice, as well as their ambitions of professional development, which is the
highest level of their professional growth. This level directly influences the reflection and evaluation of education practice of student teachers, and also the planning and design of future development. In addition, it has a deep effect on student teachers’ internal motivation, self-identity, value orientation and professional selection.

**Figure 1.** Four levels of Professional Development.

**Figure 2.** Mechanism of Critical Incidents.

**Mechanism of Critical Incidents on the Professional Development of Student Teachers**

The process of occurrence of critical incidents and their subsequent follow-up will have different effects on the professional development of student teachers in terms of cognitive thinking, behaviors and so on, which is confirmed according to the analysis of critical incidents and interviews with student teachers. At the same time, the effect of the occurrence of critical incidents has a certain regularity both at the individual level and the group level, which provides an objective basis of analyzing the mechanism of critical incidents on the professional development of student teachers. In summary, after experiencing critical incidents, student teachers will produce four low-to-high levels of internal processing, including “cognition and understanding”, “conflict and judgment”, “decision and behavior” and “reflection and construction”. This process constitutes a general mechanism that influences the professional development of student teachers, as shown in Figure 2.

At the concrete level, the process of “cognition and understanding” refers to the fact that student teachers use the existing knowledge and experience to carry out the relatively intuitive understanding of the causes, constituent elements, forms and results of critical incidents, initiating internal evaluation in accordance with conventional logic and general guidelines.

The process of “conflict and judgment” is on the basis of the previous level of internal evaluation. Students teachers process a higher level of value judgments and factual judgments with the combination of contradictory relationship and results of critical incidents, accompanied by comparing the difference between subjective and objective criteria, as well as individual and general guideline. This brings the cognitive conflict and debugging in the internal processing of student teachers, and promotes them make the subjective judgment based on the result of the debugging to meet the level of self-cognition and experience. This process will trigger the subjective decision-making of student teachers.

In the process of “decision and behavior”, based on their own decision-making results, student teachers will take certain actions to participate in the contradictory relationship of critical incidents, thus to have an impact on the development and outcomes of incidents because of their decisions and behaviors. In the meantime, student teachers will compare and reflect their own decision-making, and make a relatively comprehensively critical analysis of critical incidents according to subjective criteria and general guidelines, and ultimately complete the meaning construction and value extraction.

From the beginning to the end of the incidents, the internal processing of student teachers is accompanied by the deep reflection of their own, and process the cycle of evaluation, action, re-evaluation. [11]
In this process, student teachers continually internalize the value and meaning by reflecting the connotation of critical incidents. Combining with the original experience and cognitive structure, they realize the accumulation of knowledge and perfection of cognitive construction, ultimately promoting the improvement of the thinking level, the development of wisdom and optimization of behaviors, thus to better guide their own professional practice.

**Conclusion**

It is possible to reveal the influence mechanism and growth value of the critical events on student teachers by means of studying the critical events, which also provides the basis for the hierarchical structure and the internal process of student teachers’ professional development. Analysis of the critical events plays a guiding role in the practice supervision. On the one hand, the practice of pre-training should be refined to guide student teachers to master the response experience of critical events. On the other hand, cooperative teachers should give full play to help student teachers reflect and internalize the critical events, and promote their professional growth during the internship. At the same time, except for the natural occurrence of critical events, it is also necessary and feasible to initiatively create different kinds of critical events to promote the professional growth of student teachers. For this purpose, the proper use of the positive function of critical events has already become an effective attempt and favorable way to comprehensively improve the professional growth of student teachers, which is also a new path in the pre-service teacher education research field in current years.

**References**


