

The Application of the Interconnected Model of Professional Growth and the Change of Teacher Role in the Development Process of Expert Teacher

Shun-Ho Wang

Zhaoqing Avenue, Duanzhou District, Zhaoqing City526061, Guangdong Province, China

School of Education Science, Zhaoqing University

celine6192514@qq.com

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Abstract. The cultivation of expert teacher symbolizes the improvement of educational quality. In recent years, the research of expert teacher has been numerous in the education field, but more emphasis is placed on the comparison of the characteristics of expert and novice teacher, including knowledge construction and teaching practice. This article focuses on the development of expert teacher with the Interconnected Model of Professional Growth (IMPG), to help expert teacher to develop professionally more effectively. This paper proposes three application strategies of the "IMPG", which include: 1. Expanding the influencing factors of "environmental change" with the internet. 2. Expanding the "change sequence" of personal domain with the learning community. 3. Building the stronger "growth networks" with action research. After the application of this model, the analysis of expert teachers in this paper should appear in four new roles, which include "learning expert", "research expert", "cooperative expert", and "expert in physical and virtual teaching", so that teachers' professional growth will be more open, diverse and concrete.

1. Introduction

In the process of teacher cultivation, it is often expected that novice teacher can become expert teacher immediately through professional training and teaching practice. However, the expert teacher is not a quick success, and his professional growth is gradually becoming. On the perspective of the career development of teacher, it is very long growing process from the pre-service teacher and trainee teacher in the teacher training stage to the proficient teacher and expert teacher in the in-service stage. In this process, how to turn a novice teacher into an expert teacher is highly concerned by the educational scholars. Therefore, this study proposes the basic concept of the "IMPG" for the development of expert teacher. In the complex context of educational situations, this paper summarizes the application strategy of this model and the transformation of the role of expert teacher.

2. expert teacher

In the past, some people have questioned whether "teaching work is a professional job?" "Is the teacher an expert?" These questions are gradually being answered today. In 1986, Berliner gave a speech at the annual meeting of the American Educational Research Association: "In Pursuit of the Expert Pedagogue"[1]. After that, the idea that "teachers are teaching experts" has gradually gained attention and adoption. In addition to the qualifications of qualified teachers and the formal and continuous teaching conditions, the definition of "expert teacher" of this paper includes the following four standards:

2.1 The standard of professional intelligence

Teacher has received awards for teaching projects, or public praise, affirmation or praise from the education director, and he has served as a counselor for the initial teacher or teacher study group.

2.2 The standard of teaching experience

Teacher who has more than seven years of practical experience in specialized subject teaching.

2.3 The standard of personality traits

Teacher who has love can continue to learn, and dare to innovate.

2.4 The standard of teaching attitude

Teacher has the teaching acuity, classroom management methods and teaching strategies. He could arrange teaching content skillfully, and master the key points of teaching.

The expert teacher must be a collection of all the above standards. If the teacher with only the seniority standard is not an expert teacher, that is, the experienced teacher is not the expert teacher. He must have other standards, and he is regarded as an expert teacher.

3. The interconnection model of professional growth (IMPG)

In the past, the professional development model of teachers mainly consisted of five modes: expert teaching mode, peer teaching mode, self-directed mode, school development mode and cooperative action mode. However, all the models have a common feature, that is, they all belong to the linear model which cannot solve the all problems of teachers' professional growth, so the nonlinear model of "IMPG" emerges. The content of "IMPG" is a combination of four domains and two mediating mechanisms that are reflections and actions to connect different domains under the change environment. The structure of the model has the characteristics of interconnection and non-linearity. Its content includes the following four parts [2]:

- I. An influencing factor: the change environment.
- II. Four domains: including external, practical, personal, and results areas.
- III. Two mediating mechanisms: "reflection" and "enactment".
- IV. Two types of growth: "change sequences" and "growth networks".

4. The Application of the "IMPG"

4.1 Expanding the influencing factors of "environmental change" with the internet.

The "IMPG" advocated by Clarke and Hollingsworth marks the influencing factors of "the change environment" only cover the context of "inside the campus" and ignore the social and cultural environment outside the "campus". In fact, the overall social and cultural environment outside of the campus has changed dramatically in recent years. With the development of information technology, professional teachers have been unable to obtain fast-updated professional knowledge through traditional training models. This new type of education service model based on "Internet + education" has become a new trend in the development of teachers' professional competence. It can provide high-quality resources and form an online teacher learning community. Teachers can independently construct a learning community across interdisciplinary fields through e-learning platforms, new technologies in cloud computing, education blogs, and QQ and MSN instant messaging software. In short, the network virtual communication platform and the mobile Internet are the information and stimulation of the external domain. In terms of the "IMPG", the "growth networks" can also be optimized to transform the linear development of the "change sequences".

4.2 Expanding the "change sequence" of personal domain with the learning community.

The "IMPG" pays more attention to knowledge, beliefs and attitudes in the personal domain. This may be the teaching mode in which teachers used to go it alone in the past. They rarely have the opportunity to collaborate with other teachers. They can only improve their professional knowledge through on-the-job training. However, in response to the professionalization of curriculum innovation and organizational learning, teachers need to break the island culture form a community of teaching teachers, including the establishment of community within the school, the empowerment of teachers,

the preparation of teaching, etc., teachers develop and share teaching practices, and use action learning to develop professionally and respond to reform requirements.

Teachers can exchange the teaching ideas through the interaction of the learning community. The discussion of the course materials can also involve the sharing of teaching experience. Such multiple forms and contents of interaction are effective ways to promote the change of teachers' teaching views. That is to say, if there are more opportunities for teachers to interact, the more possibilities for learning), the more obvious the growth of teaching ability.

4.3 Building the stronger "growth networks" with action research.

In the teacher continuing education model, action research is often seen as an effective way to meet the professional development needs of teachers, it fits perfectly with "IMPG". Teachers must be open-minded to observe the factors which involved in the teaching process, such as teaching methods, teacher-student relationship, subject textbooks, environmental context, etc., they should be actively thought and criticized, and then strive to improve. In addition to the "reflection-on-action" (including pre-action, in-action, and post-action reflections), there is a meta-concept of "reflection on reflection-in-action". The former refers to the teacher to find out the hidden problems and the whole picture of self-action and theory in the research process. The latter is the teacher's reflection on "reflection of action", it can clarify the values or context of the self-action. No matter what kind of action reflection, teachers can gain a deeper understanding of the actions and theory practice. This is also an effective "growth network".

5. "IMPG" promotes the role change of new generation of expert teacher

5.1 Expert teacher should transform from "teaching expert" to "learning expert"

The professional growth of teacher has gone through the pre-service teacher training stage and the in-service teacher training stage until the teacher leaves the teaching post. Throughout the process, the teacher must continue to study and research in order to continuously develop his professional connotation and gradually become an expert teacher. The fundamental spirit of the "IMPG" is to guide the expert teachers to enter the cycle of learning between the two mediating mechanisms: "reflection" and "enactment". The new generation of "expert teachers" who are changing rapidly must change from "teaching experts" to "learning experts", so that they can often change and learn, instead of being fixed in a perfect state forever, it is the real ideal expert teacher.

5.2 Expert teacher should transform from "practical expert" to "research expert"

British education scholar Lawrence Stenhouse advocated in 1975 "teachers as researchers" who believe that teaching should be based on research, in addition to "restricted professionalism" to understand students, class management and teaching skills [3]. It is necessary to develop "extended professionalism" with research attitudes and skills. In the face of various education and curriculum changes, teachers must have the conscious knowledge of "intellectuals" and "researchers". He cannot be self-satisfied about the reality of life and work. He must constantly surpass himself and study and conduct of action research in the field, which is the practice of the professional growth interconnection model to strengthen the "growth networks".

5.3 Expert teacher should transform from "individual expert" to "cooperative expert"

Peer feedback is a particularly important part of the teachers' common professional growth. When teachers are willing to share their experiences and receive feedback with their partners, the professional learning of teachers will be greatly enhanced. Furthermore, regular feedback support can help teachers build their strengths, clarify ideas and clarify the concept of myths. Teacher professional growth will be more effective. Expert teacher could then transform from "individual expert" to "cooperative expert".

5.4 Expert teacher should transform from "expert in physical teaching" to "expert in physical and virtual teaching"

The integration of information technology into teaching has become the basic quality of teachers. When the educational environment and learning content are no longer limited to the knowledge of classrooms and books, and extended to the remote virtual world (such as virtual classrooms, virtual libraries, virtual schools, etc.). New generations of expert teachers are faced with new opportunities and impacts. In addition to "physical teaching activities," they must also join the "virtual teaching activities" of the Internet to enhance their learning outcomes. For example, teachers can use the "Technological Pedagogical Knowledge" (TPK) to construct interactive systems (such as blogs, discussion forums or test systems) to help teachers understand the prior experience of students and provide students with course feedback and questions. Teachers applying "Technological Content Knowledge" (TCK) can enhance their knowledge of subject content (such as supplementing information through internet web). Teachers in the design of teaching activities can effectively apply the "Technological Pedagogical Content Knowledge" (TPACK) to construct appropriate technology learning aids, while strengthening and stimulating students' willingness and performance. In addition, teachers often use the Pedagogy Knowledge (PK) to examine the practicality and value of Technology Knowledge (TK) and then make appropriate modifications to effectively deliver Content Knowledge (CK) [4].

6. Conclusion

In the process of the teachers' professional development, teachers have to move away from the linear approach to take multiple approaches and growth networks in order to achieve the ideal goal. Therefore, this paper proposes three application strategies for transforming the "IMPG", it focuses on the external environmental factors of the internet and transform the linear development of the "change sequences". We believe that the "IMPG" could help and support teachers to continue professional growth, and transform the role of teachers to learning experts, research experts, cooperative experts, and experts in physical and virtual teaching.

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