

Project Instrument Development: Exploring the Professional Growth Continuum

Abstract--The National Science Foundation (NSF) funded *Project Instrument Development* uses qualitative and quantitative techniques—one-on-one interviews, behavior over time graphing, focus groups, and survey instruments—to capture those empowering professional growth opportunities teachers recall experiencing over the entire course of their careers. Implications for use of the data include the identification and implementation of effective professional development models and experiences that enhance teachers' retention and effectiveness at the appropriate career intervals.

The National Science Foundation (NSF)-funded *Project Instrument Development: Exploring the Professional Growth Continuum* is a continuation of a study begun by Hobbs (2004) to identify those empowering experiences of career science teachers that have caused them to persist in their careers. The original study consisted of fifteen case study interviews with teachers who had from 12 to 38 years of science teaching experience, using strategies taken from both narrative inquiry and systems dynamics. Teachers in the study drew behavior over time graphs while telling their stories of empowerment. Although the similarity of experiences among these teachers was striking, the sample size was too small and the participants lacked sufficient diversity to generalize. The current study is designed to first duplicate the techniques used in the original study with a larger and more diverse sample of teachers, and then improve on the data gathering techniques employed in the preliminary study.

Much of the recent education research has focused on new teachers and why large numbers of teachers are leaving the profession. Few studies have focused on experienced teachers in an attempt to identify factors that may have contributed to their retention. The purpose of this study is to identify those empowering experiences of career science teachers that may have helped them to persist in their careers.

REVIEW OF THE LITERATURE

What is empowerment and why is it important? Though the term empowerment is used frequently in contemporary educational discourse, no one accepted meaning is shared among all educators, but some common themes are emerging in the literature. Empowerment is most often viewed as a process through which people become powerful enough to engage in, share control of, and influence events and institutions affecting their lives. In part, empowerment requires that people gain the knowledge, skills, and power necessary to influence their lives and the lives of those they care about.

Empowerment has been described from both an extrinsic and intrinsic perspective. Maeroff (1988) described strategies for empowering teachers that assumed the involvement of an external agent. For example, he asserted that teachers should be raised in status, made more competent at their craft, and given entrée to the decision making process. Empowerment was to be defined (accorded) by those who were in positions of authority within the school system. Maeroff also noted, however, that teacher empowerment had to do with teachers' individual department, their power to exercise their craft with confidence, and ability "to help shape the way the job is done" (p. 4). In this sense empowerment stems from teachers' self-determination, or in the choices they feel they can make about teacher-related tasks, as well as their sense of self-efficacy. Both are essential to teacher effectiveness inasmuch as they impact how teachers approach their responsibilities to improve the education of their students.

Short (1992) called empowerment a complex construct (p. 7). Vogt and Murrell (1990) described empowerment as a dynamic process, and Liden and Tewksbury (1995) discussed it as occurring on a theoretical continuum, yet researchers have not thoroughly examined empowerment to this level of complexity. To do so requires consideration of

how the component parts that embody empowerment (its dimensions) interact within the environment of teachers' lives.

METHODOLOGY

Initial data collection was accomplished through the use of one-on-one interviews (Clandinin & Connelly, 2000) in conjunction with the Systems Dynamics (Anderson & Johnson, 1997) technique of utilizing behavior over time (BOT) graphs. Fifty career science teachers, most with at least 15 years experience, demographically representative of Texas teachers as a whole, and identified by administrators, fellow teachers, parents, and community members as empowered teachers were selected by the researcher to participate in this study

The teachers began by telling their stories (describing events) and constructing behavior over time graphs that chronicled their experiences of empowerment as defined by Melenyzer (1990) and Short (1992). The teachers described in detail the events they felt precipitated the highs and lows of their empowerment on all graphs as the interviews were tape-recorded for later transcription.

The teachers worked on graph paper marked with a vertical axis scale ranging from low to high empowerment and a horizontal axis marked off in increments for the length of the teacher's professional career in years. Teachers drew peaks and valleys that are indicative of their relative feelings of high and low empowerment. They were encouraged to label these features. See *Figure 1* for an example of a typical behavior over time graph showing one teacher's perceptions of her feelings of empowerment.

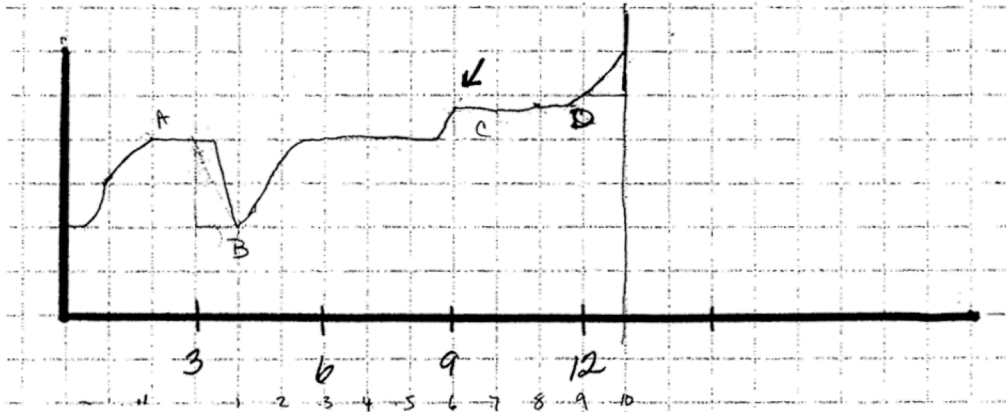


Figure 1: Example of a behavior over time graph of teacher empowerment

After an empowerment graph was completed each teacher was read the definition and subsequently drew additional graphs illustrating high and low points they had experienced in terms of each of the **six dimensions of empowerment** as identified by Short including:

- **decision making** (teachers' participation in important school-related decisions),
- **professional growth** (opportunities for teachers to develop and expand their perspectives and skills),
- **status** (respect and admiration from colleagues),
- **self-efficacy** (teachers' feelings of ability to be effective),
- **autonomy** (freedom to control professional life and decisions), and
- **impact** (ability to directly influence life in the school).

Teacher transcripts are read numerous times. A coding system is used to identify story-line themes taken from the oral interviews. These themes are compared with each individual's graphs and a comparison of graphs is completed.

During the initial coding process a conscious attempt is made to set aside the dimensions of empowerment as identified in the literature; nevertheless, the categories correlate to the dimensions of empowerment as described in Short's work. In some cases the "fit" is nearly perfect, although the teachers' stories give richer interpretations to the dimensions than Short's definitions implied. More accurately, the categories or

storylines seem to be the contexts in which the dimensions of empowerment appear and are subsequently encouraged or impaired.

An underlying premise of the study is that empowerment is a complex construct. To isolate and examine the dimensions individually seems counter to explaining it as such, and poses a risk of failing to make connections between dimensions. Furthermore, the teachers' stories include descriptions of events that contain interwoven storylines and multiple dimensions. As a result the final structure for reporting the results of the qualitative portion of the study approach three elements of organization simultaneously:

1. The coded storylines (which are the contexts in which the dimensions occur),
2. The dimensions themselves (which the data shows evolved over time), and
3. A sequence identified as consisting of three phases in the development of empowerment in the lives of these teachers.

In the end, the sequence of phases becomes the primary organizer, with the contexts drawn from the teachers' stories and the dimensions identified in the literature serving as the secondary means of organizing and elaborating the results.

FINDINGS

Analysis of the transcripts and graphs revealed the following influential experiences and patterns in the development of empowerment in the teachers interviewed:

- Autonomy appeared early as a naive sense of choice and evolved over time into a mature sense of responsible decision-making. Autonomy, the most complex and abstract of the dimensions, most nearly mirrored empowerment itself.
- A personal sense of autonomy gave "heart" to the empowerment process, allowing teachers to persist through trying circumstances.

- Decision-making had the most immediate effect on teacher empowerment as the events associated with changes in teaching context and the decisions that caused those changes caused graphs to plummet.
- Professional growth provided the “mind”—an intellectual remedy for lack of preparation for teaching and challenging teaching contexts—and eventually supported a mature sense of self-efficacy, which was reflected in teachers’ increased confidence in their teaching, involvement in decision-making, and their status as professionals.
- The professional development needs of the teachers varied as their careers progressed and the context of their assignment changed.
- Collegial relationships were seen as important in enhancing and sustaining their sense of empowerment. These relationships became very important in sustaining their sense of empowerment during their 9th or 10th year of teaching, a period when most of the teachers reported a leveling off in their empowerment and some were contemplating leaving the profession.
- Success in promoting student achievement and recognition from administrators, parents, colleagues and others were important in enhancing the sense of status felt by the teachers. However, the teachers often generated negative stories related to their status.
- The stories told by the teachers as they interpreted their graphs did not reflect a need or quest for control over schools, but focused primarily on their quest for effectiveness as teachers, their need for targeted professional development, and the importance of collegial relationships.

CONCLUSIONS & IMPLICATIONS

This study confirmed the roles and identified the relationships of the six dimensions of empowerment (autonomy, decision-making, impact, self-efficacy, status, and professional growth) identified by Short as they evolved in the contexts of teachers' experiences. Although complex in their interactions and subject to the causal loops of systems dynamics, the dimensions did, nevertheless, appear and mature in an identifiable sequence. Evidence concerning the appearance and maturation of these dimensions should be considered in making decisions in regard to how the talents and effectiveness of teachers can be enabled and maximized.

A model emerged that conceptualized the teachers' experiences and their perceived growth in empowerment. (See *Figure 2*) The model shows empowerment as a growth process with three phases of development: The Initiating Phase, The Growth Phase, and the Sustaining Phase. Similar dimensions or constructs characterize each phase. However, the dimensions become increasingly complex and sophisticated, and reach maturity during the third phase as reflected in the following summaries.

- During the Initiating Phase (Years 1-3) teachers recalled struggling with their lack of preparation yet growing in confidence as they practiced their craft in their classrooms. Their time was devoted to learning what to teach and how to teach it.
- During the Growth Phase (Years 4-8) teachers recalled becoming more aware of professional development opportunities. Their growing feelings of self-efficacy were supported by real evidence of student success. They were challenged by the teaching context—students, principals, and working conditions. They began to be involved in decision-making groups and took on leadership roles.

Phases of Empowerment

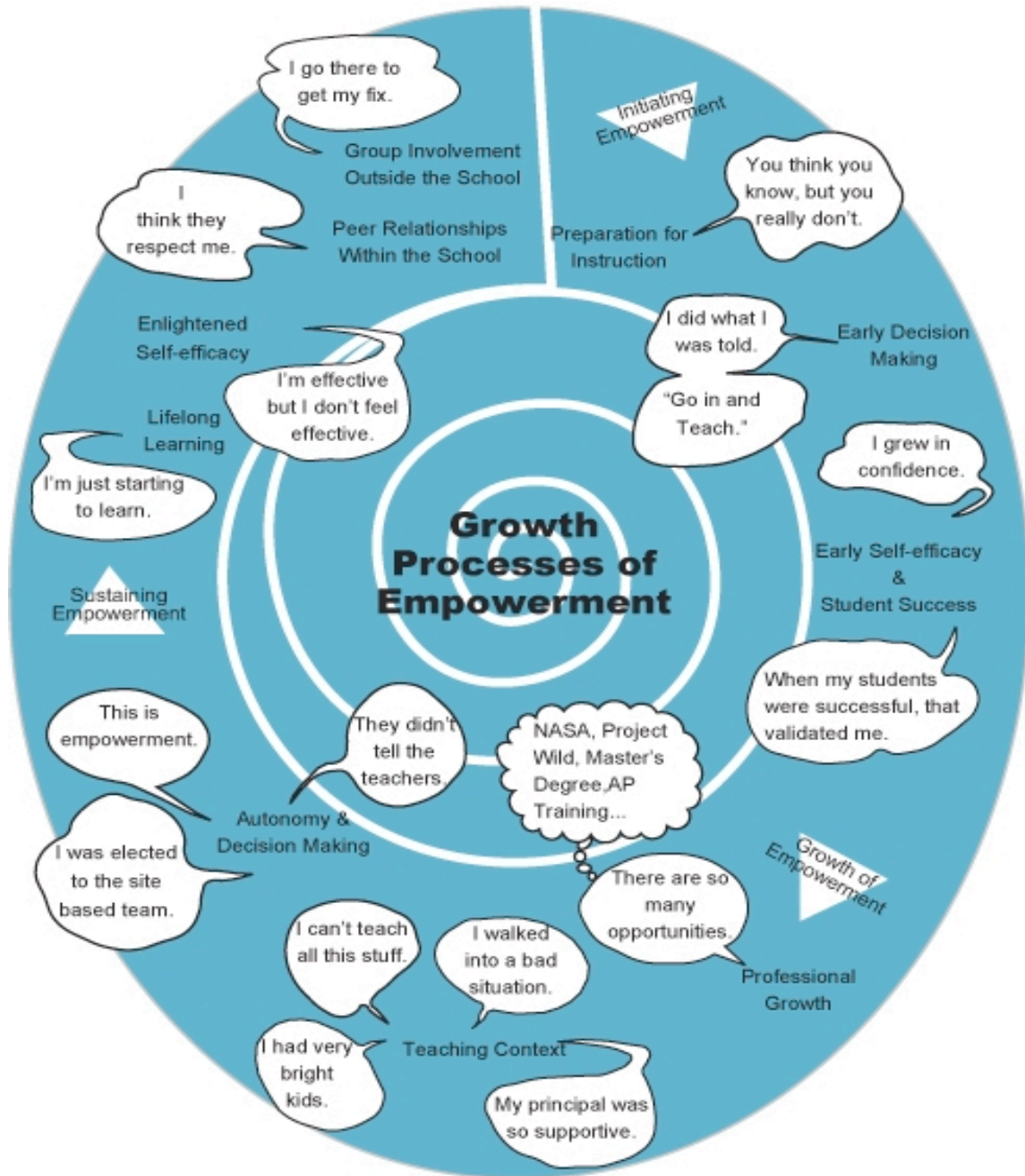


Figure 2—Phases of empowerment

Adapted from *The Dance of Change*, p. 28.

- During the Sustaining Phase (Year 9 and beyond) these teachers saw learning as a lifelong process. They felt admired and respected and were impacting education on and off campus. They had strong connections with organized groups and they were redefining their own sense of self-efficacy. However, by year 9 the teachers' graphs all showed a "leveling off" of empowerment. Typically, their sense of empowerment was sustained, but their growth was stalled. It was apparent that the most mature teachers needed different and tiered professional development programs if their sense of personal and organizational empowerment was to continue to develop.

Developing and Sustaining Teacher Empowerment

This study supports the implementation of tiered professional development opportunities for teachers. The developmental needs of teachers in Phase 1 are vastly different than those in Phase 3. Yet, most school systems take a one-size-fits-all approach to offering growth opportunities to its professional staff. During the first three years of employment new teachers should be supported as they learn the logistics of being a classroom teacher. Teachers reported that peer assistance facilitated this process. However, this assistance was often incidental and not always available when needed. The stories of these teachers, as well as those of many others, provided a convincing argument that an organized and systemic mentoring program is needed for teachers in Phase 1. Furthermore, new teachers should be directed toward targeted professional development opportunities that address individual needs and/or weaknesses. The process of becoming competent and efficient classroom teachers overwhelms new teachers. Any demands on their time in response to their needs should be carefully structured so that outcomes are related to the challenges they are encountering at this phase of their career.

Professional development during the second phase should assist teachers in becoming more effective in designing and delivering instruction that meets the needs of their particular student population. This study indicated that teachers in this phase have concerns about their self-efficacy, or instructional effectiveness in terms of student achievement. Professional development should capitalize on this concern. Also, many teachers in this study found areas of strong interest during this phase that later became the professional focus for their collegial connections beyond their classrooms. Thus, it is important that teachers be encouraged to sample a variety of professional development offerings and pursue individual interests and needs. Furthermore, teachers in this phase were becoming involved in leadership activities and roles. These leadership roles enhanced their sense of empowerment as their voices were being heard and their actions were benefiting their colleagues and students. Overall, data in this study indicated the importance of providing opportunities for teachers to become involved in meaningful leadership activities. It is important to note that there was no evidence that these teachers were interested in leadership activities that centered on administrative responsibilities.

During the third phase in their development of empowerment, the teachers in this study recognized the importance of lifelong learning and noted a strong need for collaboration with other professionals who were functioning at their level of competence. Some also sought new challenges. As already noted, their graphs showed a leveling off in their growth in empowerment. School districts should be flexible in allowing these Phase 3 teachers to forego some of the standard offerings and attend, instead, workshops and conferences that meet their individual interests and needs. They must be afforded opportunities to engage with colleagues in and outside their campuses. Fullan (1993) claimed that opportunities for teachers to work together as “kindred spirits” who were

involved collegially would form a critical mass of empowered teachers with the capacity to renew schools on a continual basis. Of course, in doing so, they would be sustaining and renewing their sense of empowerment.

If teacher empowerment is to become a means of improving schools, then teachers must be supported throughout the process of reaching a self-actualized level of empowerment—of being all that they can be. Only a few of the teachers interviewed for this study have reached that level, and some of them were leaving the system due to lack of opportunities for further professional growth. The availability of activities that are designed to increase their instructional capacity and provide opportunities for sustained collaborative interaction with other teachers would enhance the probability of their retention and that of other experienced and effective teachers who are at a similar stage in their careers.

Update on the Research

Project Instrument Development: Exploring the Professional Growth Continuum is now in its second year of National Science Foundation support. Dr. Hobbs and Graduate Research Assistant Amy Moreland are currently conducting six local focus group meetings around the state where teachers who have been previously interviewed are meeting together to share ideas on the research and compare their own experiences to the Empowerment Model included in this article. The model will later be refined based on these teachers' input.

In the spring of 2008, work will begin on a survey instrument to collect quantitative data from large numbers of classroom science teachers. That instrument will be based on teacher experiences, comments, and quotations taken from the interviews and

the focus group meetings. Work on the survey is scheduled for completion in the fall of 2008 and the survey should go online on the TRC website early next year. The survey instrument, the ultimate outcome of Project Instrument Development, will allow collection of real time data regarding teachers' perceptions of their empowerment and either confirm or indicate changes that need to be made in the model and the conclusions about teacher empowerment that the model advances.

REFERENCES

- Anderson, V. & Johnson, L. (1997). *Systems thinking basics: From concepts to causal loops*. Cambridge, MA: Pegasus Communications.
- Clandinin, D.J. & Connelly, F.M. (2000). *Narrative inquiry: Experience and story in qualitative research*. San Francisco: Josey-Bass.
- Fullan, M. (1993). *Change forces*. New York: Falmer.
- Hobbs, M.E. (2004). *Systems Dynamics and empowerment in career science teachers: A narrative inquiry*. Retrieved September 10, 2005, from wwwlib.umi.com/dissertations/fullcit/3124515
- Liden, R.C. & Tewksbury, T.W. (1995). Empowerment and work teams. In G.R. Ferris, S.D. Rosen, & D.T. Barnum (Eds.), *Handbook of Human Resource Management* (pp.386-403). Cambridge, MA: Blackwell.
- Maeroff, G. (1988). A blueprint for empowering teachers. *Phi Delta Kappan*, 69(7), 472-477.
- Melenyzer, B.J. (1990). *Teacher empowerment: The discourse, meanings, and social actions of teachers*. Paper presented at the annual Conference of the National Council of States on Inservice Education, Orlando, FL.
- Senge, P.M., Kleiner, A., Roberts, C., Ross, R.B., Roth, G. & Smith, B.J. (1999). *The dance of change*. New York: Currency Doubleday.
- Short, P.M. (1992). *Dimensions of teacher empowerment*. Pennsylvania State University, Program in Educational Administration (ERIC Document Reproduction Service No. 338614).
- Vogt, J.F. & Murrell, K.L. (1990). *Empowerment in organizations*. San Diego: Pfeiffer & Co.