

Self-efficacy an Integral Component of Teacher Professional Development

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Abstract

The importance of self-efficacy in studies of professional development was shown in a study of teacher development in the management domain in which student teachers' changes in their general conceptualisations of management or schema types were found to be associated with changes in teacher efficacy. The role of teacher efficacy in development was investigated through the use of three efficacy factors, one of which, difficult student efficacy, was more directly related to the management domain than the other two factors, teacher efficacy in producing outcomes and contextual efficacy in overcoming limiting influences of student family and social background.

These changes in efficacy sometimes entailed the adoption by student teachers of a more realistic sense of difficult student and/or contextual efficacy. Changes in schema types across a low to high schema type developmental threshold were accompanied by changes in efficacy scores. The particular efficacy score and the direction of the change varied according to the nature of the student teachers' developmental pattern and/or the direction of the schema type change. An examination of the relationships between teacher efficacy, situational or field experience variables and schema development showed that teachers' sense of efficacy is integral to the way teachers perceive and respond to management situations. Investigation of other personal influences identified in case studies data indicated their role in changes in efficacy factors.

This paper shows the importance of including efficacy in studies of teacher development, and the need for efficacy to be studied with consideration of likely sub-factors is discussed. The discussion draws upon the analysis of both longitudinal case study and cross-sectional extensive phase data comparing experts and novices at varying levels in

teacher education courses.

Introduction

Teachers' professional development in the classroom management domain has been found to be non-linear, holistic and complex (Butcher, 1990). This study of teachers' developmental paths found that there were different patterns of movement toward a goal of management expertise without each movement necessarily being in the direction of domain expertise. At times student teachers may not show a movement toward a higher level of management expertise but may stay at or vacillate between different lower forms of development. The complexity of teacher development in this domain was evident in the range of schema aspects and personal and situational influences, including teacher efficacy, which need to be considered in structuring a teacher education program

to facilitate student teachers' movement towards expertise.

Teachers' sense of efficacy influences how their knowledge is translated into action with preservice teachers' self-efficacy statements being found to be related to their use of newly learnt teaching strategies (Gorrell & Capron, 1990). This form of self-referent thought is seen by Bandura as mediating 'the translation of knowledge and abilities into skilled performance' (1990, p. 315). The enhancement of self-efficacy and its integral role in teachers' development within different domains have been highlighted by Bandura who claims that:

Self-efficacy beliefs are the product of a complex process of self-persuasion that relies on cognitive processing of diverse sources of efficacy information conveyed enactively, vicariously, socially and physiologically. Once formed, efficacy beliefs contribute significantly to the level and quality of human functioning (1993, p. 145).
This paper examines the role of self-efficacy in teacher professional development in the management domain through studying its relationship to changes and transitions in management schema types. The roles of situational and other personal development influences with respect to changes in efficacy and schema types are also addressed.

Background

A grounded theory study of development toward classroom management expertise required the use of data-derived and conceptually-related schema types. Both empirical and conceptual validation of types were used for examining the appropriateness of the schema types for the study of development path patterns. The empirical validation entailed the analysis of both cross-sectional and longitudinal data sets while the conceptual validation entailed the examination of the credibility of the schema types as evidenced through the fruitfulness of the use of the types for analysing schema differences over time, identifying the presence of patterns within the schema differences, and providing conceptual tools for examining schema change processes over time (Eisner, 1991). Both extensive and intensive phase data were used in the analysis of teachers' development in the management domain.

A set of classroom management schema types to be used in tracing

development changes in longitudinal data was initially constructed by examining cross-sectional data on three schema aspects (content, structure and meaning) for both declarative (personal networks of teachers' principles and generalised ideas and beliefs) and procedural (knowledge scripted into forms which can be used to explore and respond to different management situations) domain knowledge from student teacher participants in three different year cohorts and from expert managers. There were two phases of data collection: the extensive phase with data obtained from cohorts of participants through ordered tree and questionnaire tasks, and the intensive phase with data obtained from case study participants through interviews and classroom observations. The schema types were constructed at two knowledge levels: first at the domain conceptualisation level with teachers' expression of their declarative and principle-based procedural knowledge, and secondly at the level of teachers' script-based procedural knowledge responses to specific management situations.

The key characteristics of each schema type are presented below. The five schema types were grouped into three levels (types 1 and 2 as low, types 3 and 4 as high, and type 5 as very high) across which schema change occurred. The classification of the schema types into the three levels was based upon the differences in schema meaning and structure evident across these three groupings of schema types and the incidence of the different types in the data. Types 3 and 4 were referred to as high levels of schema types because the management approaches expressed in belief statements were more similar to those of the experts (Type 5) than those of Types 1 and 2. Since the occurrence of schema type 5 was rare amongst the participants who consisted largely of student

teachers, this schema type was collapsed with high. Schema type levels were used for reporting whether teachers stayed at low or high levels or moved across the low-high threshold. While a professional goal is for teachers to be expressing higher level schema types, it was expected that there would be movements in both directions across the low-high threshold as student teachers addressed particular aspects of their development in the management domain.

Type 1 participants saw themselves as the source and controller of events thus using a directive strategy. Their objective varied across forms of knowledge with declarative knowledge being marked by an idealistic focus on learning while an orderliness focus tends to take over as knowledge becomes proceduralized. Because of their having few ideas about teaching, the still sparse instructional ideas come to dominate in the management schema causing confusion within the schema expressions across declarative and procedural forms of knowledge.

With Type 2 a directive for order approach emerges. Declarative, but not procedural, knowledge about organisation and deviancy becomes extensive and very important, showing a belief in order but with little knowledge about how to achieve it. There is a problem, however, as relationships ideas are also of some importance. Conflict is possible as, say, the wish to be on good terms and be liked interferes with

behaviours necessary to obtain order. Consolidation at a Type 2 level requires a resolution of this disequilibrium and an acquisition of procedural knowledge.

Type 3 is characterised by a clear commitment to obtain classroom learning but with more variability in strategy. Directive strategies are favoured more often than facilitative ones. Teaching/learning becomes congruently very prominent in both the extensive declarative knowledge and the limited procedural knowledge base. Here relationships and, possibly, organisation have become shelved for the time being.

Thinking across categories is narrowed so that relationships and organisation ideas have a low prominence but, within these constraints, thinking becomes more complex and logically related.

The learning goal of Type 4 becomes more pervasive across all knowledge forms and a facilitative strategy replaces directiveness, especially in procedural knowledge. There is a schema reconstruction. Instructional ideas are very important but relationships and organisation are also prominent so conflict could come from reconciling three prominent categories with each other and with the variability in strategies. A Type 4 schema is more organised, business-like and practical in its approach to management in concrete situations than the previous three schema types but the process causes confusion as they try to form general guidelines from their experiences.

The Type 5 schema is remarkable in that there are consistent aims to achieve learning and to nurture group well-being. Strategy and the complexity of thinking can be, however, flexibly adapted to contexts. They describe themselves as basically facilitative but do not hesitate to be directive where appropriate. Management is seen as important but as a means for achieving the main purposes. Across all forms of knowledge there is a richness and extensiveness of ideas and particularly in procedural knowledge they establish and maintain routines wherever possible. Resolution of tension allows a focus away from self and onto the needs and perceptions of learners. The schema has a logical and hierarchical integrated structure enabling complex and abstract thinking.

Development path patterns

Teachers' developmental paths are the routes teachers take as they bring their actions to more effective states by means of adopting new ways of conceptualising and responding to phenomena. These new ways of conceptualising and responding subsume, at least in the long term, the former ways of conceptualising and responding. They are paths in that there is movement toward a goal with no assumption that all teachers

follow the same route toward that goal. They are developmental in that there are changes in the teachers as they move towards higher levels of development or expertise, though this does not mean that each movement along the path is overtly in the direction of a higher level of development. Development path patterns provided a two dimensional view of development, across three or more occasions, indicating both the overall direction of the movement (axis) and the schema type level(s)

involved in that movement (see Figures 1, 2 and 3 for representations of induction, induction revisiting and decline development path patterns).

Four major categories for the analysis of preservice teachers' development path patterns emerged which allowed the movements in schema types across different occasions to be traced. These categories were: induction-low/high.

decline-high/low,
plateau-low,
vacillating plateau-low.

A revisiting development path pattern was noted with several student teachers whose changes in schema types included a decline movement to a low schema type after they had already moved to a high schema type.

EMBED Word.Picture.6

Figure 1 Induction development path pattern

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Figure 2 Induction development path pattern with 'revisit' to lower levels

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Figure 3 Decline development path pattern

Efficacy factors and factor loadings

A Teaching Questionnaire Form of 28 items, based on the work of Gibson and Dembo (1984), was used by the researcher with both preservice and inservice teachers. Examples of the 15 items which represented the three factors which emerged from factor analyses using the modified Teacher Efficacy scale are presented with their factor loadings in Table 1. The reliability of the instrument was measured using a Cronbach Alpha coefficient which gave a result of 0.767.

Factor 1 reflected the perceived ability of teachers in general to deal with factors outside the classroom such as student background, family, society, and was labelled Contextual Efficacy.

Factor 2 focussed on a teacher's perceived personal efficacy relating to students who are difficult from either a teaching or management perspective and was labelled Difficult Student Efficacy.

Factor 3 focussed on those aspects of individual teacher efficacy relating to teachers' ability to have an impact on student outcomes, and was labelled Outcome Efficacy.

Table 1

Factor structures and item weightings.

Results

The role of self-efficacy in teacher professional development in the management domain was studied first through analysing the efficacy characteristics of each schema type and relating these to the goals focus for each of the five schema types. Extensive phase data about the

changes in efficacy and schema type levels which were found to occur from pre-practicum to post-practicum occasions were then examined. The roles of teacher efficacy , other personal influences and situational influences in teachers' development were investigated further through the analysis of intensive phase data.

Management schema types and teacher efficacy

Efficacy characteristics together with the schema goal focus of each of the five schema types are presented in Table 2. Type 1 was characterised by low levels of contextual and difficult student efficacy and medium level of individual teaching efficacy. This may reflect a limited experience with management situations and an awareness of a need for more extensive knowledge related to such situations. Type 2 had high contextual efficacy and medium difficult-student and outcome efficacy. These levels of efficacy could be related to a confidence in addressing different situations teachers meet - a confidence which may not have been proven in practice. Type 3 had a high outcome efficacy, while they had a medium sense of efficacy for dealing with difficult students. There was no clear central tendency for Type 3 in contextual efficacy reflecting considerable variability amongst the group on this efficacy factor. This contrasted with Type 2 with that group's higher level of contextual efficacy. Type 4 teachers were fairly confident about teachers' ability to address different situations but they were not as confident about, or were possibly more realistic about, their efficacy in achieving learning outcomes or in dealing with difficult students. Type 5 teachers, like Type 4, were fairly confident about their efficacy in addressing situations where students were being affected by their contexts and by their dealing with difficult students. However, they were not as confident, or possibly more realistic, about their efficacy in achieving student learning outcomes.

Table 2

Management schema types, efficacy characteristics and schema focus

A comparison of the efficacy profile and the goal focus for each of the schema types showed that a shift in the efficacy profile was accompanied by a change in the goal focus. A learning goal was salient for Type 1 schema in both efficacy profile and the schema focus while for Type 2 an increased salience for contextual and difficult student efficacy was associated with a shift to an orderliness goal focus in declarative knowledge. A further shift was noted in the efficacy profile and goal focus for Type 3 schema with learning outcomes having the highest salience in both. The analysis of the three schema types showed a tuning of the efficacy and the domain schemata which was reflected in an increasing congruence between them.

The goal focus and efficacy profile for types 4 and 5 showed a reshaping of the efficacy profile with more attention being given to awareness of the challenges involved in effecting pupil learning outcomes. This shows an increasing realism amongst these higher schema

types. It is possible that personal and/or schema factors hindered this increased realism amongst the lower schema types.

This analysis of efficacy profile and schema goals was based upon a comparison from lower to higher schema types. While development in the management domain does not usually take such a sequential pattern, it does show the tuning that occurs between the two schemata and the importance of realism in the interaction between the schemata and management and instructional contexts. The order of the shifts in the two schemata and the role of the situational characteristics cannot be examined in these data. It is possible that a change in one schema could influence a change in the other schema and vice versa. The interactive nature of the influences of the schemata and of the schemata and the contexts need further study.

Relationships between efficacy and schema type changes - extensive phase

A second means of studying role of efficacy in schema type changes and transitions was through examining data concerning changes with Year 2 and 3 student teachers from the pre-practicum to post-practicum occasions (see Table 3). The pattern of efficacy changes in the Year 1

pre-practicum to post-practicum data was not considered as only three student teachers crossed the low to high or high to low schema type threshold between these two occasions. Five Year 1 student teachers crossed this threshold between post-practicum year 1 and pre-practicum year 2. Data from two of these five student teachers together with data from two student teachers were included in this analysis with respect to revisiting lower schema types. Furthermore four of the 11 student teachers who crossed the low/high or high/low threshold from the post-practicum to pre-practicum occasions were also included in the pre-practicum to post-practicum data. The data from these four student teachers were examined from the perspective of efficacy changes and revisiting low schema types

Low to high schema type changes from pre-practicum to post-practicum Year 2 students ($n=6$) - all students rose in contextual efficacy scores and in difficult student efficacy (4 students) and/or outcome efficacy scores (4 students). Year 3 students ($n=6$) - all students rose in difficult student efficacy scores and 4 students rose in outcome efficacy scores with 2 students having no change in outcome efficacy scores. Three of the students declined and three of the students rose in their contextual efficacy scores. The change to a higher schema type was facilitated by their practicum experience, with further experience in management situations and assistance from cooperating teachers and university supervisors, and was accompanied by all six students in the second year of their program gaining a higher sense of contextual efficacy, while most gained also in their difficult student (4 students) and outcome efficacy (4 students). For the six students in the third year of their program it was accompanied by an increase in difficult student efficacy and an increase ($n=4$) no change ($n=2$) in their outcome efficacy. The differences in the pattern of changes in

contextual efficacy, compared to that commented upon in the previous section, could be related to their relatively high level of contextual efficacy at the beginning of the practicum.

Table 3
Practicum Occasions, Schema Type Changes and Efficacy Changes(D)

High to low schema type changes from pre-practicum to post-practicum
Year 2 students (n=8) - five students declined in their outcome efficacy and two in their difficult student efficacy scores, one student rose in outcome efficacy with no change in difficult student efficacy. A total of five of the six students had no change in their difficult student efficacy. One student rose in all three efficacy scores. Four of the students rose and four of the students declined in their contextual efficacy scores.

Year 3 students (n=5) - all students declined in either difficult student or outcome efficacy scores. Four of the students declined in their outcome efficacy scores and three in their difficult student efficacy. Three of the students declined, one of the students rose and one student had no change in contextual efficacy scores. The decline in scores for most students was in their outcome efficacy with three declining, one having no change and one rising in contextual efficacy scores. The decline in contextual efficacy could have been related to an enhanced awareness of the challenges they met through the students' family and social backgrounds.

Revisiting low schema types and teacher efficacy changes

One student had already moved from a low to high schema type between the year 1 post-practicum and year 2 pre-practicum occasion and then declined to a low schema type from pre-practicum to post-practicum year 2. This student's rise in difficult student and outcome efficacy scores could be related to an anticipation of the effect of a consolidation of domain knowledge through the revisiting of low schema types. A similar rise, this time in outcome efficacy only with no change in difficult

student efficacy, was also evident with another student teacher (ID 65) who declined to a low schema type from post-practicum year 2 to pre-practicum year 3 after moving from a low to high schema type during the year 2 practicum. This same pattern of results was found with the two other student teachers who revisited low schema types. This revisiting and rise in efficacy scores could be related to a consolidation of the knowledge bases in their domain schema. In the longer term such consolidation may be the basis for their returning to a higher schema type.

The extensive phase data showed further the interactive nature of the influences of management schemata, efficacy schemata and field situations on each other and on teachers' development. The interaction of these influences can be examined further with the intensive phase case study examples of these transitions.

Intensive phase data regarding development path patterns and teacher

efficacy

The focus for this analysis of the intensive phase case study data is the nature of the transitions involved in crossing the low/high or high/low schema type threshold. One example of each of the induction, decline and induction revisiting development path patterns are presented and then discussed together with reference to several expert and plateau low case study participants. The latter two groups are included briefly to provide further insights into the change processes involved in teachers' development in the management domain.

Induction path pattern (Joyce)

Probably the major influence on Joyce's development to a Type 3 after vacillating between Types 1 and 2 was her own ability to perceive herself as a learner of teaching. In her advice to others in her first year she suggested that they ask questions and experiment with new ideas. She described herself as always willing to learn and when frustration about high noise levels was felt, she outlined three different techniques she tried. She missed feedback after the primary practicum and, in summing up after her most difficult practicum, she described it as significant, enjoyable, and "a good learning experience" from which she had learnt a lot. Yet Joyce reserved her right to experiment and amend the ideas suggested and follow through. When she was advised to yell at the class she reported:

Well I did that in English yesterday and that worked. They were quiet for five minutes. After that they just started up again, really noisy, and so I put minutes on the board and kept them in at lunchtime and they were really quiet after that....I don't know, I don't think it's (yelling) for me.

Her cooperating teachers were perceived as significant influences throughout and they were described as supportive, helpful and providing ideas. Especially on the most difficult practicum her needs were being met as the teachers gave positive feedback, making her feel more confident while at the same time "they've both let me work from my own self and show my own personality, show my teaching, and they havent restricted it in any way".

Her induction path to Type 3 schema type was accompanied by a movement from a low, through a medium to a high sense of outcome efficacy. She also changed to a high sense of contextual efficacy while she moved to a lower sense of difficult student efficacy. The support and constructive feedback from her cooperating teacher assisted her in being confident though realistic in what she could attain with the students, particularly the more difficult students and classes.

Decline path pattern (Annette)

Annette was studied in the second and third years of her course. She moved from a Type 2 to Type 3 in the second year, then declined to Type 2 and subsequently to Type 1 in the third and last year. Annette's efficacy scores were low (quartiles 1 &2) for outcome efficacy but higher for contextual efficacy. She believed that most teachers can

impact on learning but was not sure about her own skills and knowledge.

This could have been due to her lack of confidence about content. Her confidence about dealing with difficult students remained low (quartile 1) throughout her three year course. Field notes would suggest that these levels are unduly harsh self-assessment and that her concern for outcomes and her metacognitive evaluations of her own performance and her directions to herself while teaching could account for this. But given her situation of low outcome efficacy, high standards for evaluating herself and her focus on instructional aspects, it was not surprising that Annette could not achieve the integration of major dimensions necessary to move to a higher schema type level. Her move back to a lower level suggested that she had put this challenge on hold for the time being, reverting to a more idealistic frame of reference. In this frame of reference relationships was dealt with as a facilitative strategy while she remained preoccupied with learning goals. Unlike the experts, relationships had not become a major goal which could be viewed over a longer time frame. It was realistic but not surprising that she rated the students and the difficult class as negative experiences of little influence. Annette's changes in schema types were in the direction of her low sense of outcome efficacy. She moved through a concern with order to an idealistic focus on learning which she was unable to achieve in difficult situations. The interaction of her efficacy schema, her low and unrealistic sense of what she had or could achieve and the challenge of difficult management situations contributed to the decline in schema types and outcome and difficult student efficacy.

Induction Revisiting Development Path Pattern (Greg)

Greg's revisiting to Type 1, after his induction path from Type 1 through Types 2 and 3 to Type 4, was associated with a significant decline, on the fifth occasion, in his contextual and difficult student efficacy scores and, to a lesser extent, in his outcome efficacy score. The first two lowered efficacy scores could be associated with Greg's development of a more realistic sense of how he can teach and influence students, regardless of differing contexts and difficult students. Greg's practicum experiences, teaching primary classes at an Aboriginal community and teaching small secondary school classes in a school for emotionally disturbed boys, influenced his movement to a facilitative approach for learning. Possibly because of these unusual Year 2 practicum experiences Greg was not given the opportunities to consolidate and extend the organisational dimension of his management schema earlier in his course. The revisiting of Type 1 may also have been related to Greg's affinity to the idealism of Type 1 compared to the orderliness focus of Type 2. It is also likely that after consolidating his declarative knowledge he could move again to a higher schema type accompanied by his realistic sense of what he could achieve in different management situations.

Discussion of intensive phase data

Two expert managers, Allen and Jason, showed an ability to be realistic about the demands of their management situations, maintain a focus on their learning and group goals and be prepared to work at attaining these goals over a longer period of time. They monitored the

effectiveness of their strategies with respect to the needs of the students and the goals for the class and were not concerned with their own needs. They were seen as being confident in their approach to situations while not necessarily having high efficacy scores.

The expert managers were flexible in the way they pursued the goal focus for their management schemata. They adapted to situations in such a way that their sense of efficacy was based sometimes upon a short-term frame of reference while at other times it was based upon a longer term frame of reference. This depended upon the needs of particular students or groups. They were able to distinguish between routines or procedures which were appropriate for the immediate

situation and those which were preferable in the long-term for fostering group as well as individual learning. This movement between the two time perspectives was facilitated by their ability to give priority to the characteristics of the students rather than to their own long-term goals.

Joyce, induction path pattern, showed how with the assistance of a cooperating teacher as a significant other she was able to move to a high schema type and attain a higher sense of outcome efficacy. The realism in her efficacy was reflected in her lower level of difficult student efficacy and her willingness to try different strategies to meet the challenges of particular situations. Annette was not able to move beyond her immediate concern for orderliness and learning outcomes to a more flexible approach and more realistic goals within different management situations. Greg's revisiting of a lower schema type was accompanied by a decline in efficacy scores. His practicum experiences in the last year challenged him to consolidate his domain knowledge, broaden his range of strategies and develop a more realistic sense of what can be achieved in immediate situations. With his consolidated knowledge base and his openness to the different management contexts Greg has the basis for returning to a high schema type. This would be accompanied by enhanced efficacy and a longer term perspective on the pursuit of his management goals.

The case studies of plateau low students showed how their lack of movement to a high schema type was related to a concern with themselves and their own anxieties. Narelle, a plateau low student, was concerned with not falling apart and with having everything perfect. Her focus, almost preoccupation, with instruction limited her view of management situations and the strategies needed to address them. Jacqueline, a vacillating plateau low student, saw her confidence and sense of efficacy varying with the different teachers with whom she was working. She was unable to confront difficult management situations, was concerned about relationships and focussed more on acquiring new instructional methods. With the positive influence of a significant cooperating teacher Jacqueline moved to address management situations and attained a more realistic sense of efficacy.

General Discussion

Teachers approach each classroom situation with their own sense of

efficacy about what they can contribute to pupil learning, the extent to which they can address situations related to difficult pupils, and the influence they think teachers can have upon pupils in light of the influences of their families and society in general. Changes in efficacy associated with changes in schema types and different development path patterns show the interaction of the personal, schema and situational influences in teacher development.

The processes involved in this development include schema tuning between the management goals and efficacy profile, a shift to a learning or order goal being accompanied by a change in the relative salience of the different efficacy factors. These change processes involve student teachers gaining a more realistic or grounded sense of different classroom contexts.

Expert managers and students whose development reflects an induction path pattern have the ability to move beyond their own concerns and preoccupations and be responsive to the characteristics of particular classes and situations. The firmness of their commitment to their management goals enables them to move outside themselves temporarily and adopt a more responsive approach to pupils and situations. They are reflective in their approach and, especially the expert managers, are able to distinguish between long and short term goals.

The interactive nature of the schema, personal and situational influences in development shows the need to be attentive to each of these in teacher education and professional development programs. A reflective and metacognitive approach to themselves and their own

learning can assist student teachers in moving beyond their own strongly held views and mind sets to being more responsive to pupils and their situations. The interaction of such an approach with supportive significant others can provide a valuable basis for moving from a low to high schema type.

Explicit attention needs to be given in these programs to self-efficacy. Students, teacher educators and cooperating teachers need to have a comprehensive understanding of the role of efficacy in teacher development and the dialectical nature of its relationship with other influences on development. Incorporating a self-regulatory focus in teacher education programs acknowledges the role of self-efficacy as an integral component in learning. Feedback to students which gives attention to their learning and the way they respond to situations in the management domain could enhance their sense of efficacy and skill development while also motivating them to be more attentive to pupil and situation characteristics than to their anxieties and concerns about their own performance (Schunk, 1996).

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