

Designing a Comprehensive Professional Competency Model for Multi-Grade Teachers: A Meta-Synthesis Study

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Abstract

The aim of the research was to design a model of professional competencies for multi-grade classroom teachers. The research method was meta-synthesis using the Sandelowski and Barroso model. The research domain in the qualitative section included articles published in reputable journals and theses related to the professional competencies of multi-grade classroom teachers, published quantitatively, qualitatively, or mixed-methods between 2010-2023, which were presented descriptively or by providing a model. Documents were selected through purposive sampling. The criteria for document entry into the meta-synthesis process were thematic relevance, inclusion of research keywords, methodological quality, and comprehensiveness of data; the sample was judged and selected in a two-stage screening process considering the PRISMA checklist and exclusion criteria; 33 studies that, based on researcher consensus, addressed more than 80% of the checklist items entered the systematic review. For document analysis, extraction of open codes, and final classification of codes, Maxqda24 software was used. Using the Sandelowski and Barroso model, the researcher presented a comprehensive model of professional competencies for teachers in multi-grade classrooms. Data validity was confirmed using credibility and transferability techniques through researcher self-review, data triangulation, and Kappa coefficient. The main components of the model include: 1. Ethical Competence, 2. Communicative Competence, 3. Mastery of Pedagogical Content Knowledge, 4. Mastery of Subject Matter Knowledge, 5. Educational Competence, 6. Self-Professional Development Competence, 7. Behavioral Competence, 8. Physical-Biological Competence, 9. Political Competence, 10. Personality Competence, 11. Emotional and Attitudinal Competence, 12. Devotional-Belief Competence, 13. General Knowledge Competence, 14. Cultural and Social Competence, 15. Educational Management and Leadership Competence.

Key Words: Professional Competencies Model, Professional Competencies, Multi-Grade Classrooms.

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Introduction

In today's complex and changing world, education is recognized as one of the most important factors in social and cultural development. In this regard, teachers, as the central axes of the teaching-learning process, play a key role in shaping the future of different generations. Especially in multi-grade classrooms, where teachers face diverse groups of students with different learning levels, the professional competencies of teachers are of particular importance. A multi-grade classroom refers to a class where students from several different grade levels are present in a common educational environment. These types of classes are usually established in rural or less populated areas where the number of students is insufficient to form separate classes for each grade. In multi-grade classrooms, the teacher must pay attention to the educational needs and learning level of each student and adjust teaching in such a way that all students, according to their level and needs, can benefit.

Professional competencies of teachers are essential to guarantee the quality of education and create effective learning environments. Professional competence encompasses a combination of the necessary knowledge, skills, and personal characteristics for effective teaching. In multi-grade classrooms, teachers must not only have the ability to teach at different levels but also demonstrate strong managerial and communicative skills to respond to the educational and emotional needs of students. Multi-grade teachers need specific competencies including student grouping, curriculum planning, and diverse and separate teaching specific to each grade to meet the diverse needs of students (Taole, 2020). Effective teaching in multi-grade classrooms involves planning and time management skills to manage different educational levels in a single classroom. Current teacher training programs usually lack sufficient training for multi-grade teaching, indicating a gap in professional development (Brown, 2010). Multi-grade classrooms require a specific set of skills and knowledge that differ from traditional teaching in single-grade classrooms.

Problems of multi-grade classes include lack of educational equipment, lack of a specific educational model for multi-grade, absence of a specific curriculum for multi-grade, shortage of experienced and efficient human resources, bilingualism, and time management, lack of space and equipment, and similar issues. Among these, the dilemmas of "shortage of trained human resources" or "insufficient competence and capability of multi-grade teachers" are among the most important obstacles threatening the multi-grade approach (Rafiei, 2021). Given the issues and problems of multi-grade classes, having qualified teachers is one of the most essential needs of these classes. Heidari Naghdali et al. (2023) conducted research titled "Formulating an Appropriate Model for the Professional Development of Multi-Grade Teachers." The results showed that the professional development of multi-grade teachers is a complex and multi-faceted process requiring macro, comprehensive, and specialized

policies. Adopting correct policies and planning can lead to a bright and promising outlook for achieving the desired goal of social justice development in deprived areas. Godfrey and Wonder (2023) in a qualitative study concluded that officials and teachers working in multi-grade classroom schools had not received training in this field. Even the guides and inspectors of schools who should provide them with multi-grade educational support lacked training in multi-grade education.

Marinkovic et al (2020) in a study on the impact of professional competence on teacher performance, investigated the ability of educational competence to affect teacher performance. The results showed that simultaneously, professional competence and educational competence affect teacher performance.

Although teachers play a very important role in the academic progress and all-round personality development of students, and this issue is more prominent at the elementary level, and despite the shortage of experienced and competent teachers in multi-grade classes, the result of a review of conducted research indicates that most studies have examined the challenges, advantages, and disadvantages of multi-grade classes; research specifically aimed at designing a model of required competencies for multi-grade classroom teachers had not been conducted. Therefore, the aim of the research was to design a professional competence model for multi-grade teachers; so that relying on its findings, a step can be taken towards improving the quality of education in these classes and guaranteeing the right to equal education for all children.

Research question

What is the model of professional competence for teachers in multi-grade classrooms?

Methodology

To conduct this research, the meta-synthesis method based on the Sandelowski and Barroso (2007) model was used. Research Domain includes articles published in reputable journals and theses related to the topic of professional competence models for multi-grade teachers, published quantitatively, qualitatively, or mixed-methods between 2010 and 2023, which were presented descriptively or by providing a model. Documents were selected by census method and sampling was done purposively. Data collection continued until informational saturation was reached. First, the text of each study was briefly reviewed once for a general understanding and its relevance to the research topic, and then these units were analyzed thematically and coded. After completing the analysis units process, in the second stage (axial coding), these codes were categorized based on their similarity or affinity, and

finally, in the third stage (selective coding), the main dimensions and subcategories were extracted from the qualitative data.

Research Findings

To answer the research question, which asks what components the model of professional competencies for multi-grade classroom teachers has, using the meta-synthesis method and its six steps, the model components were identified. In the first stage, open codes related to the professional competencies of teachers at the elementary level and multi-grade classrooms were extracted (Table 1). At this stage, 229 codes were obtained after repeated review of the studies and merging similar codes. Table 1 shows a sample of the open coding process.

Table 1: Open Codes

Row	Open Codes	Researcher(s)
1	Respect for ideologies	Bahmania (2020)
2	Sense of self-efficacy	Bahmania (2020), Askari Matin and Kiani (2018), Heidari Naghd Ali et al. (2023)
3	Feeling of satisfaction and usefulness	Heidari Naghd Ali et al. (2023), Bahmania (2020)
4	Feeling of mental and spiritual health and absence of inner complexes	Mortezaei (2021), Bahmania (2020), Heidari Naghd Ali et al. (2023), Askari Matin and Kiani (2018)
5	Professional ethics	Bahmania (2020), Askari Matin and Kiani (2018)
6	Neat appearance	Moradian (2021), Bahmania (2020), Heidari Naghd Ali et al. (2023), Askari Matin and Kiani (2018)
7	Communication with students during holidays	Moradian (2021), Bahmania (2020), Askari Matin and Kiani (2018)

In the next stage, the extracted codes were categorized according to semantic similarity, and according to the concept of the codes in each category, an appropriate name was chosen for each class (Table 2). In the subsequent step, given the exploratory nature of the study, the metaphors and main codes used in each section were compared with other metaphors and codes in different reports, and since the language used in the synthesis, in addition to breadth, clarity, and validity compared to the metaphors used in the primary studies, must encompass new metaphors, the researcher, by presenting new selective codes, has redesigned a new domain. Before presentation, the researcher, by deeply studying previous sources and searching for their strengths and weaknesses, depicted the formation process of the professional competencies model in 50 axial codes and 15 selective codes. All axial and selective codes of the research are shown in Table 2.

Table 2- Results of Axial and Selective Coding

Row	Open Codes	Axial Codes	Selective Codes
1	Attention to values, Observance of ethical principles and purification, Work conscience, Professional ethics, Self-sacrificing and compassionate	Ethics-Oriented	Ethical Competence
2	Verbal and supra-verbal skills and eloquence, Clear voice, Verbal and non-verbal skill and ability for concept transmission	Eloquence	Communicative Competence
3	Having interpersonal and intrapersonal communication, Ability to communicate with local and rural community, Management of human relations with different groups, Network communication with different groups in society, Social intelligence	Communication with surrounding community	
4	Establishing continuous communication with parents, Holding parent education meetings	Communication with parents	
5	Ability to establish effective communication with students, Utilizing concepts and language appropriate to students' age and backgrounds and guiding them, Communication with students during holidays, Questioning and answering skill in class	Communication with students	
6	Communication with other teachers, Having social interaction with colleagues, Interaction with the scientific community	Communication with colleagues	
7	Use of teacher assistants and the method of delegation to use talented higher-grade students for teaching and helping lower-grade students, Interaction and brainstorming with other multi-grade teachers by attending in-service classes, Ability to integrate and combine students from different grades in sports and artistic activities for exchanging experience	Mastery of collaborative teaching	Competence in Mastery of Pedagogical Content Knowledge

	and interaction in this field, Involving all learners in class discussions and activities, Student-centered approach, Participation of learners in teaching	
8	Futurology in education policies, Problem-solving skill, Research and investigative skill, Thinking skills, Deep thinking skill, Reflective practice and integration of action and research, Conducting activities related to action research, Study and research skill	Research skill
9	Ability to relate lessons to the local community and making materials tangible and localization of lessons as a teaching hook, Observing logical sequence when presenting materials and integrating multi-grade lessons with each other, Ability to organize curriculum content for presentation in multi-grade class, Equal attention to different subjects in different grades, Ability to extract conceptual map from content, Specifying main educational headings in the form of learning scenarios	Content organization specific to multi-grade
10	Encouraging parents to cooperate in school affairs, Strengthening the sense of participation, Participation in professional associations, Joint research and educational work, Team and collaborative work, Using participatory styles in management, Participation with external community and social institutions	Participation acceptance and management of participations
11	Sufficient knowledge in the field of educational management, Ability to perform managerial roles in the case of teacher-principals, Management and leadership of educational activities	Management and leadership skill

Based on this, with the help of sources included in the research process, the researcher obtained 268 open codes in the research process, which after careful examination by the researcher, 229 open codes relevant to the research topic were used. 50 axial codes resulting from the categorization of open codes; after review, were classified into 15 selective codes. The selective and axial codes include: 1. Ethical Competence (Ethics-Oriented), 2. Communicative Competence (Eloquence, Communication with surrounding community,

Communication with parents, Communication with students, and Communication with colleagues), 3. Competence in Mastery of Pedagogical Content Knowledge (Mastery of collaborative teaching, Research skill, Content organization specific to multi-grade, Knowledge of evaluation in multi-grade class, Knowledge of planning and instructional design in multi-grade class), 4. Subject Matter Knowledge Competence (Technology knowledge, Knowledge of teaching in multi-grade class, Mastery of modern teaching methods in multi-grade class, Content knowledge, Classroom organization, Multi-grade classroom management, Understanding characteristics and differences of students in multi-grade class, Mastery of occupational laws, Management of teaching and learning process in multi-grade class), 5. Educational Competence (Psychological competence, Knowledge of education, Educational skill), 6. Self-Professional Development Competence (Lifelong learner, Development of professional skills), 7. Behavioral Competence (Job and organizational commitment, Behavioral health), 8. Physical-Biological Competence (Mental and physical health, Environmental protection), 9. Political Competence (Political literacy), 10. Personality Competence (Creativity, Flexibility, Appropriate appearance, Humility and gentleness, Patience, Self-awareness), 11. Emotional and Attitudinal Competence (Emotional stability, Organizational belonging, Positive attitude and optimism), 12. Devotional-Belief Competence (Belief competence, Devotional competence), 13. General Knowledge Competence (General knowledge and information), 14. Cultural and Social Competence (Multicultural perspective, Social competence, Cultural competence, Attention to cultural affairs in school, Economic literacy), 15. Educational Management and Leadership Competence (Management and leadership skill, Time management, Participation acceptance and management of participations), which are in fact the components of the professional competencies model for multi-grade teachers.

Discussion and conclusion

To answer this question, valid domestic and foreign research related to the professional competencies of teachers in multi-grade and elementary levels were used. After studying the mentioned sources through qualitative content analysis, basic codes were extracted and categorized in several stages. Accordingly, the most important selective codes, which include the main components of the model, are: 1. Ethical Competence (Ethics-Oriented), 2. Communicative Competence (Eloquence, Communication with surrounding community, Communication with parents, Communication with students, and Communication with colleagues), 3. Competence in Mastery of Pedagogical Content Knowledge (Mastery of collaborative teaching, Research skill, Content organization specific to multi-grade, Knowledge of evaluation in multi-grade class, Knowledge of planning and instructional design in multi-grade class), 4. Subject Matter Knowledge Competence (Technology knowledge, Knowledge

of teaching in multi-grade class, Mastery of modern teaching methods in multi-grade class, Content knowledge, Classroom organization, Multi-grade classroom management, Understanding characteristics and differences of students in multi-grade class, Mastery of occupational laws, Management of teaching and learning process in multi-grade class), 5. Educational Competence (Psychological competence, Knowledge of education, Educational skill), 6. Self-Professional Development Competence (Lifelong learner, Development of professional skills), 7. Behavioral Competence (Job and organizational commitment, Behavioral health), 8. Physical-Biological Competence (Mental and physical health, Environmental protection), 9. Political Competence (Political literacy), 10. Personality Competence (Creativity, Flexibility, Appropriate appearance, Humility and gentleness, Patience, Self-awareness), 11. Emotional and Attitudinal Competence (Emotional stability, Organizational belonging, Positive attitude and optimism), 12. Devotional-Belief Competence (Belief competence, Devotional competence), 13. General Knowledge Competence (General knowledge and information), 14. Cultural and Social Competence (Multicultural perspective, Social competence, Cultural competence, Attention to cultural affairs in school, Economic literacy), 15. Educational Management and Leadership Competence (Management and leadership skill, Time management, Participation acceptance and management of participations), which are in fact the components of the professional competencies model for multi-grade teachers.

Given the role of multi-grade schools in the growth and development of sparsely populated areas, the knowledge, ability, competence, and skill of multi-grade school teachers have always been of great importance. Teaching in a multi-grade class, in a remote environment, with minimal facilities and the least financial feedback, is a combination of interest, art, and expertise. The multi-grade teacher is simultaneously responsible for the roles of teacher, disciplinarian, principal, health instructor, educational instructor, counselor, and even caretaker.

This model is designed in accordance with the current needs of multi-grade teachers, and prominent local and global standards. In general, the findings related to competencies showed that among the teacher's competencies is mastery of the necessary specialized knowledge for leading and establishing transformation in the field of education. A teacher who can lead and establish transformation well must themselves possess good specialized knowledge. In fact, specialized knowledge in the field means that the teacher, in addition to mastering subject matter knowledge, must have mastery of pedagogical content knowledge (awareness of the learner's status and knowledge related to teaching methods). Furthermore, the teacher must master educational components; in other words, they must know learning theories, learning spaces, and situations well to be able to create learning opportunities. A teacher who, according to the class conditions and students, manifests education and educational aspects in

integration with the teaching and learning of lessons in students. Therefore, based on what was mentioned, a proper understanding of subject concepts, research tools, awareness of the structure of the specialized field, and using it in creating learning opportunities focused on updating concepts appropriate to the learner's cognitive level are considered teacher competencies. Also, the teacher's ability to use diverse, attractive, and efficient testing and assessment methods corresponding to ensuring learning and academic progress, and providing appropriate and purposeful feedback to the learner, parents, and school, knowledge of the learner and educational and psychological knowledge of learning, proper understanding of the curriculum and learning design, creating a suitable learning environment, and using technology are key topics in this domain that have not been neglected in this model. In addition to the above, an efficient teacher must possess local culture and knowledge to be able to understand the cultural characteristics of children by considering different ethnicities and cultures, pay necessary attention to all students, and also be able to familiarize students with different cultures of the country as a suitable model and teach them to respect each other. According to the research findings, general and individual affective attitude and personality ability are competencies that every teacher must have. Children of a society have the right to receive appropriate and worthy education. Therefore, the teacher who provides this education must be an individual who has ethical competence, is ethically of firm character and shaped by dimensions, values, and ethical principles. If a teacher does not have these competencies, they cannot establish a proper relationship with students. Therefore, competencies such as commitment to religious, ethical, and revolutionary values in the context of educating learners, providing the ground for learners to achieve a pure life, participation, cooperation, interaction, and establishing effective communication with colleagues and staff, and having a multicultural perspective are of very high importance, which have been considered in this model. Also, having economic, political, and environmental literacy are other components of the model that strengthen the teacher's ability for the multi-dimensional education of students.

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