



RESEARCH ARTICLE

The Development of a Coaching Model to Enhance Inclusive Special Education Management Competencies and Creative Thinking Skills in Schools within the Service Areas of Phranakhon Rajabhat University

Nantawan Kaewchote, Pakorn Supinanont

College of Teacher Education, Phranakhon Rajabhat University, Thailand

ABSTRACT

This research aimed to: (1) investigate the current problems and needs related to inclusive special education management; (2) develop a coaching model to enhance competencies in inclusive special education management and creative thinking skills; and (3) evaluate the effectiveness of the developed coaching model by comparing participants' competencies and creative thinking skills before and after implementation. The study employed a Research and Development (R&D) approach integrated with mixed-methods research. The research process consisted of four phases: Analysis (R1), Development (D1), Implementation (R2), and Evaluation (D2). The participants comprised 30 mentor teachers and pre-service teachers majoring in Elementary Education at the College of Teacher Education, Phranakhon Rajabhat University, selected through purposive sampling, together with five experts who evaluated the developed model. Research instruments included an interview protocol, questionnaires, an inclusive special education management competency assessment, a creative thinking skills assessment, and focus group discussions. Quantitative data were analysed using mean, standard deviation, and t-test, while qualitative data were analysed using content analysis. The findings revealed that: (1) mentor teachers and pre-service teachers had limitations in their knowledge and skills related to inclusive special education management and expressed a need for a professional development approach emphasising authentic practice; (2) the developed coaching model consisted of four major components: principles, objectives, a five-step coaching process, and evaluation. The overall appropriateness of the model was rated at the highest level ($M = 4.61$); and (3) following implementation of the coaching model, participants demonstrated statistically significant improvements in both inclusive special education management competencies and creative thinking skills at the .05 level. The mean competency score increased from 2.83 before implementation to 4.32 after implementation, while the mean creative thinking skills score increased from 2.85 to 4.31. Participants also reported the highest level of satisfaction with the coaching model ($M = 4.71$). The findings indicate that the developed coaching model can be practically implemented in educational settings to strengthen inclusive special education management competencies while promoting creative thinking skills among mentor teachers and pre-service teachers.

Keywords: *Coaching Model; Inclusive Special Education; Teacher Competency; Creative Thinking; Inclusive Education*

1. Introduction

Education plays a fundamental role in preparing individuals to adapt to the complex demands of the twenty-first century, where lifelong learning, problem solving, creative thinking, adaptability, and respect for individual differences are increasingly essential. Within this context, inclusive education has become a key approach to promoting educational equity by ensuring that all learners, particularly those with special educational needs, can access, participate in, and benefit meaningfully from education. Rather than simply placing learners with special needs in mainstream classrooms, inclusion

requires educational systems, curricula, teaching practices, learning environments, and support mechanisms to respond effectively to learner diversity (UNESCO, 2020; Ainscow, 2020).

Thailand has continuously promoted educational opportunities for learners with special educational needs through legislation and national guidelines, including the Education Provision for Persons with Disabilities Act B.E. 2551 (2008). Nevertheless, a gap persists between policy and school-level implementation. Schools continue to encounter limitations in translating inclusive-education principles into school-level systems and classroom practices that respond effectively to learner diversity (Ainscow, 2020; UNESCO, 2020). Effective inclusive practice therefore depends substantially on teachers' professional competencies. Teachers must be able to analyse individual learner needs, develop and implement Individualized Education Programs (IEPs), differentiate instruction, use appropriate resources and assistive technologies, manage diverse classrooms, and design flexible learning opportunities consistent with Universal Design for Learning (UDL). Assessment must likewise move beyond uniform procedures towards authentic, individualised, and formative approaches that provide meaningful evidence of learner development (CAST, 2018; Black & Wiliam, 2018).

Developing such competencies requires more than conventional professional development based primarily on knowledge transmission. Inclusive classrooms involve complex and context-sensitive situations in which teachers must connect theory with authentic practice, experiment with instructional alternatives, receive constructive feedback, reflect on their decisions, and continuously improve their practice (Florian & Camedda, 2020). This challenge is particularly significant for pre-service teachers, who must translate university-based knowledge into practice during professional teaching experiences. Mentor teachers therefore play an important role in modelling professional practice, observing teaching, providing feedback, facilitating reflection, and supporting pre-service teachers in analysing and solving instructional problems; these functions are consistent with practice-based instructional coaching (Knight, 2018).

Educational coaching provides a promising mechanism for addressing these professional-development needs because it emphasises sustained, practice-based learning through goal setting, observation, questioning, constructive feedback, reflective dialogue, action planning, and continuous improvement (Knight, 2018). Evidence suggests that teacher coaching can improve instructional practice and student achievement by engaging teachers as active participants in identifying problems, generating solutions, testing alternatives, and evaluating their professional decisions (Kraft et al., 2018). Such processes are particularly relevant to inclusive education, where teachers frequently encounter diverse learner needs for which predetermined solutions may be insufficient.

Coaching is also closely connected with creative thinking, an important professional competence for responding adaptively to learner diversity. Inclusive classrooms require teachers to redesign activities, adapt instructional materials and technologies, modify learning environments and assessment approaches, and generate alternative pathways for student participation. Creative thinking enables teachers to examine problems from multiple perspectives, generate diverse possibilities, and refine instructional solutions according to evidence from practice (OECD, 2019). For mentor teachers and pre-service teachers, creativity should therefore be viewed not merely as an isolated cognitive skill but as an integral element of professional competence that enables inclusive principles such as IEPs, UDL, and differentiated instruction to be transformed into feasible and context-responsive practices.

Despite increasing attention to inclusive education, teacher professional development, educational coaching, and creative thinking, these areas have largely been investigated separately. Inclusive education research has primarily focused on principles and competencies for responding to learner diversity; coaching research has concentrated on general instructional improvement; and creative thinking research has frequently addressed student outcomes or broader twenty-first-century skills.

Consequently, there remains a need for an integrated professional-development model in which coaching serves as the developmental mechanism, inclusive special education management competency constitutes the professional target, and creative thinking supports adaptive and innovative professional practice. This need is particularly relevant to school-based practicum contexts, where mentor teachers and pre-service teachers collaboratively confront authentic challenges associated with learner diversity.

Accordingly, the present study develops and evaluates a coaching model to enhance inclusive special education management competencies and creative thinking skills in schools within the service areas of Phranakhon Rajabhat University. Integrating inclusive education principles, practice-based professional learning, coaching and reflective processes, and creative thinking, the model is intended to bridge university-based teacher preparation and authentic school practice. By examining existing problems and developmental needs, developing and validating the coaching model, and evaluating changes in participants' competencies and creative thinking skills, the study seeks to provide a theoretically grounded and practically applicable mechanism for strengthening inclusive educational practice.

2. Literature Review

2.1 Educational coaching

Educational coaching is a developmental process that aims to enhance individuals' potential through self-directed learning, powerful questioning, reflective dialogue, feedback, and continuous professional support rather than through direct instruction. Whitmore (2017) describes coaching as a process of unlocking an individual's potential by encouraging self-discovery and internal learning. Grant (2017) further views coaching as a structured and goal-oriented process involving goal setting, planning, self-regulation, and reflective conversation. In an educational context, Knight (2018) proposes the Impact Cycle, consisting of three major stages—Identify, Learn, and Improve—which emphasises collaboration between coaches and teachers in identifying instructional problems, learning appropriate strategies, and improving professional practice.

Educational coaching therefore represents more than a conversational technique. It is a systematic professional learning process that encourages teachers to analyse their own practice, examine evidence, generate alternative solutions, and continuously improve their instructional performance. Key features of educational coaching include deep listening, powerful questioning, constructive feedback, reflective practice, and collaborative problem solving. These processes allow teachers to become active agents in their own professional development rather than passive recipients of externally prescribed knowledge.

In contemporary teacher education, coaching is particularly valuable because it connects theoretical knowledge with authentic classroom experience. Through coaching, teachers and pre-service teachers can examine real instructional situations, identify challenges, test alternative approaches, and reflect on the consequences of their decisions. This practice-based orientation supports deeper professional learning and facilitates sustainable changes in instructional behaviour. The literature reviewed in the present study therefore positions educational coaching as an appropriate mechanism for developing professional competencies required for inclusive educational practice.

2.2 Coaching Process and Teacher Competency Development

The effectiveness of coaching depends substantially on the presence of a clear and systematic process. Coaching is generally conceptualised as a developmental cycle that includes goal setting, examination of current conditions, generation of possible alternatives, action, observation, feedback, and reflection. One of the most widely recognised approaches is Whitmore's (2017) GROW Model, which consists of four stages: Goal, Reality, Options, and Will. The model supports learners in identifying desired outcomes, analysing their current situation, exploring possible solutions, and committing themselves to action.

Other coaching frameworks similarly emphasise structured professional reflection. Grant (2017) proposes goal setting, planning, action, and evaluation as major elements of coaching, while Costa and Garmston's Cognitive Coaching approach incorporates planning conversations, observation, and reflective conversations. These processes encourage metacognition and enable practitioners to learn systematically from experience. Across the reviewed frameworks, the coaching process is consistently conceptualised as a structured and goal-oriented cycle rather than an informal conversation.

In relation to teacher professional development, coaching provides a personalised form of professional learning that is directly connected to classroom practice. Knight's (2018) Instructional Coaching approach emphasises collaborative goal setting, observation of instruction, reflection, and continuous improvement. Coaching also supports practice-based professional learning, reflective practice, and evidence-based decision making. In contrast to short-term professional training, coaching provides sustained support that responds to the individual developmental needs of teachers.

Consequently, coaching can contribute to teacher competency development by strengthening professional knowledge, instructional skills, self-awareness, reflective capacity, and professional attitudes. The literature reviewed for this study suggests that coaching is particularly effective when it is continuous, individualised, evidence-informed, and connected directly to authentic teaching practice.

2.3 Teacher Competency for Inclusive Special Education

Competency refers to an integrated capacity that enables individuals to apply knowledge, skills, attitudes, and personal attributes effectively in authentic situations. Contemporary competency frameworks emphasise that knowledge alone does not constitute competence; rather, competence is demonstrated through an individual's ability to apply knowledge appropriately when addressing complex problems and professional tasks.

A common framework identifies three interrelated dimensions of competency: Knowledge, Skills, and Attitudes (K-S-A). Knowledge provides the conceptual foundation for professional decision making, skills represent the ability to apply knowledge in practice, and attitudes influence professional behaviour, motivation, and willingness to engage in continuous development. In teacher education, these dimensions are interdependent and collectively determine teachers' ability to respond effectively to changing educational contexts.

Teacher competency for inclusive special education requires an additional set of capabilities related specifically to learner diversity. Teachers need to understand individual differences and special educational needs, analyse learner characteristics, adapt instructional activities, manage inclusive classrooms, use appropriate learning resources and technologies, and collaborate with other professionals. Inclusive competency therefore extends beyond specialist knowledge and includes the capacity to design learning opportunities that enable all learners to participate meaningfully.

The concept of Inclusive Pedagogy emphasises designing learning experiences that accommodate all learners rather than separating students according to perceived ability or disability. Teachers are expected to create flexible learning alternatives that enable students to participate in common classroom activities without unnecessary labelling or segregation. The reviewed literature also highlights the importance of Differentiated Instruction, in which teachers adapt content, learning processes, and expected products according to learners' readiness, interests, and learning needs. These principles are central to teachers' ability to translate inclusive education from policy into classroom practice.

Collaboration represents another essential inclusive competency. Teachers must work effectively with special education teachers, parents, psychologists, administrators, and other specialists in planning and supporting individual learners. Such collaboration requires communication, coordination, shared

decision making, and a common understanding of learner needs. The reviewed literature therefore conceptualises inclusive special education competency as an integration of professional knowledge, instructional and collaborative skills, and positive attitudes towards learner diversity.

2.4 Inclusive Special Education

Inclusive education is grounded in the principles of equity, educational justice, human rights, and equal access to quality education. Contemporary perspectives regard learner diversity not as a problem to be corrected but as a fundamental condition to which education systems must respond. Inclusive education therefore involves more than placing students with special educational needs in mainstream classrooms. It requires systematic changes in educational structures, resource allocation, teacher development, school practices, instructional design, and assessment.

A central principle of inclusive education is that educational systems should adapt to learners rather than requiring learners to adapt to inflexible systems. Schools must therefore identify and reduce barriers to learning and participation and create environments in which all learners can access instruction, participate meaningfully, and achieve educational success. Inclusive education consequently involves both school-level systems and classroom-level instructional practices.

Current perspectives emphasise flexible and differentiated instruction as central to inclusive practice. Teachers may need to adapt content, learning processes, assignments, learning materials, technologies, and assessment approaches in response to individual learner differences. This creates a shift from providing isolated special services towards designing learning experiences that are accessible to everyone within the same educational environment.

High-quality inclusive education requires a coordinated system of governance, resource allocation, staff development, school-level support, and continuous monitoring. In the Thai context, particular emphasis has been placed on teacher development, instructional supervision, Individualized Education Programs (IEPs), appropriate learning media and technologies, professional learning communities, and collaboration with families and communities.

Thus, inclusive special education should be understood as a systemic approach designed to ensure access, participation, belonging, and educational achievement for learners with diverse needs. Its successful implementation depends heavily on teachers who are able to translate inclusive principles into flexible, responsive, and contextually appropriate classroom practices.

2.5 Creative Thinking Skills

Creative thinking refers to the capacity to generate, develop, evaluate, and refine ideas that are both novel and appropriate to a particular context. Contemporary perspectives regard creativity not as a fixed talent possessed by a limited number of individuals, but as a developmental capacity that can be strengthened through experience, problem solving, reflection, experimentation, and supportive learning environments.

Kaufman and Beghetto's Four-C Model of Creativity distinguishes different levels of creativity, ranging from personal meaning-making and everyday creativity to professional and eminent creative achievement. This perspective supports the view that creativity can be developed progressively within educational and professional contexts rather than being restricted to exceptional creative performance.

The literature reviewed in the study further indicates that creativity involves multiple interacting dimensions. These include cognitive processes, knowledge, personality, motivation, self-confidence, and environmental conditions. Creativity is therefore not simply the production of unusual ideas; it depends on the ability to connect knowledge, consider multiple perspectives, generate alternatives, evaluate

possibilities, and transform ideas into practical action. The reviewed literature particularly emphasises divergent thinking, knowledge integration, and learning through action as important dimensions of creativity in educational settings.

In the context of inclusive education, creative thinking is especially significant because teachers frequently encounter instructional problems for which standard solutions may not be sufficient. Teachers must be able to modify learning activities, redesign instructional materials, adapt technologies, vary assessment methods, and generate alternative pathways through which learners with different needs can participate successfully. Creative thinking therefore contributes directly to teachers' adaptive and innovative professional practice.

2.6 Creative Thinking in Teacher Professional Practice

Creative thinking is increasingly recognised as an important dimension of contemporary teacher professionalism. Teachers are expected not only to apply established instructional methods but also to design, adapt, and improve learning experiences in response to changing classroom conditions. This is particularly important in inclusive classrooms, where learners differ in readiness, abilities, communication patterns, interests, behaviour, and preferred modes of learning.

For teachers, creativity involves the ability to identify instructional problems, examine those problems from different perspectives, generate multiple possible responses, select appropriate solutions, test them in practice, and refine them on the basis of evidence. Creative professional practice may therefore appear in the design of learning activities, instructional materials, learning technologies, classroom environments, assessment tasks, or alternative forms of learner support.

The literature reviewed for this study suggests that teacher creativity is influenced by cognitive processes, motivation, self-efficacy, collaboration, and professional learning environments. Environments that provide psychological safety, opportunities for experimentation, meaningful technology use, collaborative professional learning, and reflective practice can support the development of creative teaching practices.

Educational coaching is closely related to this process because coaching encourages teachers to question assumptions, explore alternatives, reflect on evidence, and revise professional actions. Powerful questioning and reflective dialogue can stimulate teachers to move beyond habitual responses and generate new instructional solutions. Coaching can therefore serve not only as a mechanism for developing professional competency but also as a process for promoting creative thinking within professional practice.

2.7 Related Studies and Research Gap

Previous studies in Thailand indicate that coaching can contribute to the development of teacher competency, particularly in instructional practice, reflective thinking, self-development, and professional learning. Research combining coaching with practice-based approaches has demonstrated improvements in teachers' cognitive, interpersonal, and instructional competencies. Studies related to project-based learning, STEM education, technology-supported learning, and active learning have also reported positive effects on creative thinking, problem solving, and higher-order thinking. Taken together, these findings suggest that systematic teacher coaching and practice-oriented learning approaches have considerable potential to strengthen professional competence and creativity.

International studies similarly highlight the importance of systematic teacher development, flexible instructional design, and learning environments that respond to learner diversity. Research based on Inclusive Pedagogy suggests that effective inclusive teaching involves planning for all learners, designing

flexible classroom activities, and creating opportunities for students with different needs to participate together rather than providing separate learning experiences .

Taken together, the reviewed literature provides substantial support for three major propositions. First, coaching is an effective practice-based mechanism for teacher professional development. Second, successful inclusive education depends heavily on teachers' integrated knowledge, skills, attitudes, and ability to respond flexibly to learner diversity. Third, creative thinking enables teachers to generate and refine alternative instructional solutions when conventional approaches do not adequately address individual learning needs.

2.8 Positioning the Present Study

However, these three areas have commonly been investigated as relatively separate lines of research. There remains a need for an integrated professional development model in which coaching functions as the developmental process, inclusive special education management competency constitutes the primary professional outcome, and creative thinking supports adaptive and innovative professional practice. This gap is particularly relevant in teacher practicum contexts, where mentor teachers and pre-service teachers must collaboratively respond to authentic problems associated with learner diversity.

Accordingly, the present study integrates these theoretical and empirical foundations in developing a coaching model designed to strengthen inclusive special education management competencies while simultaneously promoting creative thinking skills among mentor teachers and pre-service teachers in schools within the service areas of Phranakhon Rajabhat University. The conceptual relationship underlying the study can be represented as follows:

Educational Coaching → Inclusive Special Education Management Competencies → Creative Thinking Skills → Enhanced Inclusive Educational Practice

3. Methodology

3.1 Research Design

This study employed a Research and Development (R&D) approach integrated with a mixed-methods research design. More specifically, an Exploratory Sequential Design was adopted, in which qualitative investigation was initially conducted to explore existing problems, developmental needs, and contextual conditions related to inclusive special education management. The qualitative findings were subsequently used as a foundation for developing the coaching model, research instruments, and quantitative evaluation procedures. This design enabled the researchers to integrate in-depth contextual evidence with quantitative findings in order to develop and evaluate a coaching model that was both theoretically grounded and practically applicable.

The R&D mixed-methods design was selected because the study had two complementary purposes: to develop a context-responsive coaching model from empirical needs and theoretical foundations, and to obtain preliminary evidence of changes following its implementation. The exploratory qualitative phase therefore informed model construction, while the quantitative pretest-posttest phase examined within-participant change. This design was intended for developmental evaluation rather than for establishing causal superiority over an alternative intervention.

The research process consisted of four sequential phases following the R1–D1–R2–D2 structure: Phase 1: Analysis (R1), Phase 2: Development (D1), Phase 3: Implementation (R2), and Phase 4: Evaluation and Refinement (D2). Each phase was systematically connected to the subsequent phase, allowing evidence obtained from the actual educational context to inform model development, implementation, evaluation, and final refinement.

3.2 Participants

The population of the study comprised mentor teachers and pre-service teachers involved in professional teaching practicum in schools implementing inclusive education, together with experts in special education and related fields. The research population included 75 mentor teachers and 75 pre-service teachers, while the participants for each research phase were selected through purposive sampling according to their roles, relevant experience, and suitability for the purposes of the study.

During Phase 1 (R1), 30 mentor teachers and pre-service teachers participated in the analysis of existing problems, needs, and contextual conditions associated with inclusive special education management. Participants were selected on the basis of their direct experience with inclusive education, willingness to participate, and ability to provide information concerning challenges and professional development needs.

Purposive sampling was used because participation in each phase required specific experience and roles directly relevant to inclusive education and the teacher-practicum context. The sampling strategy was therefore aligned with the developmental purpose of the R&D study: information-rich participants were selected for needs analysis, experts were selected for model validation, and implementation participants were selected because they could complete the coaching cycle in authentic inclusive settings. The sample was not intended to be statistically representative of all teachers or pre-service teachers; consequently, generalisation beyond comparable contexts should be made cautiously.

During Phase 2 (D1), five experts were purposively selected to evaluate the proposed coaching model and research instruments. The experts possessed qualifications and experience in special education, curriculum and instruction, teacher development, coaching, educational research, or educational measurement and evaluation.

For Phase 3 (R2), the implementation group consisted of 30 mentor teachers and pre-service teachers majoring in Elementary Education at the College of Teacher Education, Phranakhon Rajabhat University. Participants were required to be directly involved in inclusive educational settings, willing to participate in the coaching activities, and able to complete the entire intervention process.

The implementation group combined mentor teachers and pre-service teachers because the model was designed for the practicum relationship in which school-based mentors support pre-service teachers through modelling, observation, feedback, and reflection. Including both roles enabled the coaching process to be examined within the professional context for which it was developed rather than as an isolated training activity.

In Phase 4 (D2), the five experts and participants involved in the implementation phase contributed to the evaluation of the model in terms of appropriateness, feasibility, effectiveness, satisfaction, strengths, limitations, and recommendations for further improvement.

3.3 Research and Development Procedures

3.3.1 Phase 1: Analysis (R1)

The first phase aimed to investigate the existing problems, developmental needs, and contextual conditions associated with inclusive special education management. The researchers first conducted a documentary review of relevant concepts, theories, and previous studies concerning inclusive education, teacher competency, educational coaching, and creative thinking. The review was used to establish the preliminary conceptual framework and provide a foundation for the development of research instruments and the coaching model.

Empirical information was subsequently collected from school contexts through multiple sources. These included observations of inclusive learning environments, preliminary investigation of instructional

practices, analysis of relevant educational documents such as Individualized Education Programs (IEPs), and semi-structured in-depth interviews with mentor teachers and pre-service teachers.

The interviews focused on four major areas: challenges and barriers in inclusive education, professional competency development needs, experiences with instructional approaches for learners with diverse needs, and participants' perspectives on coaching-oriented professional development.

Qualitative data from documentary analysis, observations, and interviews were analysed using content analysis. The analysis involved data organisation, coding, categorisation, synthesis, and interpretation. The findings from this phase were used to identify major areas requiring development and to establish practical directions for the proposed coaching model.

3.3.2 Phase 2: Development (D1)

The second phase focused on constructing and validating the coaching model. Findings from Phase 1 were synthesised with theoretical perspectives on educational coaching, inclusive special education, teacher competency development, and creative thinking.

The initial coaching model was developed to include its principles, objectives, developmental content, coaching process, learning activities, roles of the coach and participants, and evaluation procedures. The model was also conceptualised systematically in terms of Input, Process, Output, and Feedback to ensure consistency between its theoretical components and practical implementation.

The coaching process incorporated activities such as collaborative problem analysis, developmental goal setting, case analysis, inclusive lesson planning, instructional practice, classroom observation, constructive feedback, individual and group reflection, and revision of instructional plans. The coach functioned primarily as a facilitator, consultant, reflective partner, and professional learning supporter. Mentor teachers and pre-service teachers participated actively in analysing instructional challenges, planning solutions, implementing learning activities, reflecting on their experiences, and continuously refining their practice. These roles and processes were intended to transform coaching from a one-way advisory process into collaborative professional learning.

A training package and model implementation manual were developed concurrently. The materials covered key aspects of inclusive special education management, coaching principles, inclusive instructional design, educational media and technology, assessment practices, and creative thinking development.

The preliminary coaching model, training package, implementation manual, and related research instruments were then submitted to five experts for evaluation. The experts examined the appropriateness of the principles and objectives, consistency among model components, clarity of the coaching procedures, accuracy of the content, suitability of the activities, feasibility of implementation, and content validity of the research instruments. Suggestions from the experts were incorporated into the revision of the model before implementation.

3.3.3 Phase 3: Implementation (R2)

Following expert validation, the revised coaching model was implemented with the selected group of 30 mentor teachers and pre-service teachers in authentic inclusive educational contexts.

Before implementation, participants were informed of the objectives, procedures, roles, and expectations associated with the coaching process. They then participated in a sequence of activities designed to strengthen their knowledge and practical competencies in inclusive special education while simultaneously promoting creative thinking.

Implementation followed the same five-stage sequence for all participants: Understanding, Analysis, Planning, Coaching & Practice, and Reflection. Each stage was linked to the next through evidence from

participants' instructional planning, classroom practice, observation, feedback, and reflective records. This structured sequence was used to improve consistency of implementation while still allowing instructional adaptations to learner needs and school context.

The implementation process included analysis of inclusive instructional problems, establishment of professional development goals, inclusive lesson planning, instructional practice, classroom observation, feedback, reflective dialogue, and collaborative problem solving. Participants were encouraged to apply new knowledge in authentic teaching situations, generate alternative instructional approaches, evaluate the outcomes of their decisions, and revise their practices accordingly.

Throughout the implementation, the researchers and coaches acted as facilitators of professional learning rather than direct instructors. Continuous consultation, questioning, feedback, and reflection were used to encourage participants to analyse their experiences and construct contextually appropriate solutions. Participants' development was monitored before, during, and after implementation to obtain comprehensive evidence concerning changes in inclusive education competencies and creative thinking skills.

Pretest and posttest assessments were administered to examine changes in participants' inclusive special education management competencies and creative thinking skills. Qualitative evidence was also collected through observations, reflective records, participants' work products, and field notes in order to provide complementary explanations of the developmental process.

A single-group pretest-posttest design was used at this developmental stage because the primary objective was to examine whether the newly developed model was feasible and whether participants showed measurable change after completing the intervention. No comparison group was included; therefore, the observed pretest-posttest differences should be interpreted as evidence of change associated with participation in the coaching programme, not as definitive proof that the coaching model alone caused the improvements.

Practice-Based Instructional Media Used During the Coaching Activities

As part of the Coaching & Practice stage, participants were encouraged to design, adapt, and apply inclusive instructional media in response to learner characteristics identified during the Analysis and Planning stages. The media were treated as practice-based instructional products through which participants could demonstrate flexible learning design, appropriate use of educational technology, and creative adaptation for learners with diverse needs. Two illustrative products were a Thai reading screening board game and an inclusive mathematics game.

The Thai reading screening board game combined word- and syllable-based play, dice movement, and a QR-linked online screening component (QRThaiScreening). It was designed to support initial observation and screening of reading ability through an engaging game format. The inclusive mathematics game (QRMaths) used a number wheel, dice, and number cards to provide accessible practice with basic numerical concepts and calculation. Its visual, game-based format was intended to allow flexible participation, including for learners requiring additional support. These media were incorporated as examples of differentiated activities and technology-supported learning rather than as separate outcome measures.



Figure 1. Examples of inclusive instructional media developed/applied during the Coaching & Practice stage: Thai reading screening board game (left) and QRMaths inclusive mathematics game (right).

3.3.4 Phase 4: Evaluation and Refinement (D2)

The final phase evaluated the overall effectiveness and practical applicability of the developed coaching model. Evaluation covered both learning outcomes and implementation processes.

Pretest and posttest results were compared to determine changes in participants' inclusive special education management competencies and creative thinking skills. Participants also evaluated the model in terms of its appropriateness, usefulness, feasibility, clarity of activities, supporting materials, coaching processes, and overall satisfaction.

In addition, qualitative feedback was collected through open-ended responses, reflective records, observations, and focus-group discussions. Participants and experts were encouraged to identify strengths of the model, limitations encountered during implementation, and conditions necessary for successful application in educational settings.

Quantitative and qualitative findings were subsequently integrated to inform final revisions to the model. Adjustments were made to relevant components, procedures, activities, implementation guidelines, and supporting materials, resulting in the final version of the coaching model for inclusive special education management and creative thinking development.

3.4 Research Instruments

Five principal research instruments were developed and employed in accordance with the objectives and phases of the study.

3.4.1 Semi-Structured In-Depth Interview

A semi-structured interview protocol containing 12 questions was developed for Phase 1 to investigate problems, barriers, developmental needs, and contextual conditions associated with inclusive special education management. The interview consisted of three major sections: participants' general information, problems and barriers related to inclusive educational practice, and professional development needs.

Content validity was examined by five experts using the Index of Item-Objective Congruence (IOC). Item-level IOC values ranged from 0.80 to 1.00, with an overall mean IOC of 0.94, indicating satisfactory content validity.

3.4.2 Questionnaire

A 30-item questionnaire using a five-point Likert scale was developed to examine participants' perceptions of and satisfaction with the coaching model. The questionnaire addressed participant information, perceptions of the model, and satisfaction with its implementation.

The instrument was reviewed by five experts and subsequently pilot-tested with 30 individuals whose characteristics were similar to those of the research participants. Item-level IOC values ranged from 0.80 to 1.00, with a mean IOC of 0.96. Internal consistency reliability, calculated using Cronbach's alpha, was 0.95.

3.4.3 Inclusive Special Education Management Competency Assessment

A 35-item, five-point rating scale was developed to assess participants' competencies in inclusive special education management. The instrument comprised five dimensions:

1. learner analysis;
2. learning design;
3. organisation of learning activities;
4. use of educational media and technology; and
5. measurement and assessment.

These dimensions reflected the professional competencies required for responding to learner diversity and implementing inclusive educational practice.

The instrument was evaluated by five experts, producing IOC values ranging from 0.80 to 1.00, with a mean IOC of 0.97. A pilot test with 30 participants of similar characteristics yielded an overall Cronbach's alpha coefficient of 0.96.

3.4.4 Creative Thinking Skills Assessment

Creative thinking skills were assessed using a 24-item, five-point rating scale developed with reference to Torrance's (1974) conceptualisation of creativity. Four dimensions were assessed:

1. Fluency;
2. Flexibility;
3. Originality; and
4. Elaboration.

The items were adapted to the context of inclusive instructional design and teacher professional practice. Expert evaluation produced IOC values ranging from 0.80 to 1.00, with a mean IOC of 0.95. The instrument was pilot-tested with 30 participants with similar characteristics, resulting in an overall Cronbach's alpha coefficient of 0.94.

3.4.5 Focus Group Protocol

A semi-structured focus-group protocol was employed during Phase 4 to obtain qualitative feedback regarding the effectiveness and practical application of the coaching model. Discussion focused on four areas: appropriateness of the model, strengths, limitations in implementation, and recommendations for further development.

The focus-group protocol was reviewed by five experts for content validity. IOC values ranged from 0.80 to 1.00, with a mean IOC of 0.96.

Overall, all research instruments satisfied the established content-validity criteria, while the quantitative instruments demonstrated high internal consistency, with Cronbach's alpha coefficients ranging from 0.94 to 0.96.

3.5 Data Collection

Data collection was conducted sequentially in accordance with the four phases of the research design.

During Phase 1, documentary evidence, observations, and semi-structured interviews were used to establish an empirical understanding of existing inclusive educational practices, problems, and professional development needs.

During Phase 2, data were collected from five experts who evaluated the preliminary coaching model, training materials, implementation manual, and research instruments. Their quantitative ratings and qualitative recommendations were used to refine the model prior to implementation.

During Phase 3, baseline data were collected before implementation using the inclusive special education management competency assessment and creative thinking skills assessment. The coaching model was subsequently implemented with the participating mentor teachers and pre-service teachers. Throughout implementation, additional qualitative data were obtained from observations, reflective records, field notes, and participants' instructional products. Post-intervention assessments were then administered using the same competency and creative thinking measures.

During Phase 4, participants evaluated their satisfaction with the coaching model, while additional qualitative data were gathered through open-ended responses and focus-group discussions. These sources provided evidence concerning the model's strengths, limitations, feasibility, and potential for application in authentic educational contexts.

The use of multiple data sources allowed for triangulation between quantitative evidence of change and qualitative evidence concerning participants' professional learning experiences.

3.6 Data Analysis

Both quantitative and qualitative analyses were undertaken in accordance with the mixed-methods design.

Quantitative data were initially analysed using frequency and percentage to describe participant characteristics. Mean and standard deviation were used to analyse participants' levels of inclusive special education management competency, creative thinking skills, perceptions of model appropriateness, and satisfaction with the coaching model. These descriptive statistics were consistent with the five-point rating scales used in the study.

To determine the effectiveness of the coaching model, participants' pretest and posttest scores for inclusive special education management competency and creative thinking skills were compared using a paired-samples t-test. Statistical significance was established at the .05 level.

Qualitative data obtained from interviews, observations, reflective records, field notes, open-ended responses, and focus-group discussions were analysed using content analysis. The analytical process involved organising the data, coding meaningful units, grouping related codes into categories, identifying emerging themes, synthesising evidence across data sources, and interpreting the findings in relation to the research objectives. The original research design also specified content analysis and descriptive synthesis for explaining problems, needs, developmental processes, and outcomes associated with implementation of the model.

Finally, quantitative and qualitative findings were integrated during interpretation. Quantitative evidence was used to determine the magnitude and statistical significance of changes in competency and creative thinking, while qualitative evidence was used to explain how participants experienced the coaching process, how professional practices changed, and which characteristics of the model contributed to or constrained its implementation. This integration provided a comprehensive basis for evaluating and refining the final coaching model.

4. Results

The findings are presented according to the four phases of the Research and Development process: Analysis (R1), Development (D1), Implementation (R2), and Evaluation (D2).

4.1 Problems and Developmental Needs in Inclusive Special Education Management

The analysis revealed that mentor teachers and pre-service teachers experienced several limitations in implementing inclusive special education. Major problems concerned insufficient knowledge and understanding of inclusive education principles, particularly the development of Individualized Education Programs (IEPs) and the application of Universal Design for Learning (UDL). Participants also reported difficulties in designing flexible learning activities, selecting appropriate media and technologies, adapting instruction to individual learner differences, and conducting assessment that reflected the actual potential of learners with special educational needs.

In addition, participants had limited opportunities to apply inclusive education principles in authentic classroom contexts. Pre-service teachers in particular reported uncertainty when translating theoretical knowledge into practice, while mentor teachers lacked a systematic process for supporting and supervising inclusive instructional practice. Consequently, participants expressed a strong need for professional development that emphasised practice-based learning, reflective practice, continuous feedback, and ongoing professional support rather than conventional lecture-based training.

These findings provided the empirical foundation for the development of the coaching model.

4.2 Development and Expert Evaluation of the Coaching Model

Based on the needs analysis and synthesis of relevant theories, a process-based coaching model was developed to enhance inclusive special education management competencies and creative thinking skills. The model integrated inclusive education, educational coaching, experiential learning, reflective practice, continuous feedback, creative thinking, and collaborative learning.

The developed model consisted of four major components: (1) principles, (2) objectives, (3) a five-step coaching process, and (4) evaluation. The coaching process was organised as a continuous cycle consisting of:

1. Understanding – developing foundational knowledge of inclusive education, coaching, and creative thinking;
2. Analysis – identifying learner characteristics, instructional problems, and professional development needs;
3. Planning – designing flexible and inclusive learning plans, media, technology, and assessment approaches;
4. Coaching & Practice – implementing instructional plans in authentic contexts with observation, coaching, and feedback; and
5. Reflection – analysing outcomes, identifying strengths and areas for improvement, and linking reflection to the next cycle of development.

The five stages were designed as a continuous coaching cycle integrating practice, feedback, and reflective learning.

The developed model consisted of four major components: (1) principles, (2) objectives, (3) a five-step coaching process, and (4) evaluation. The coaching process was organised as a continuous cycle consisting of: (1) Understanding—developing foundational knowledge of inclusive education, coaching, and creative thinking; (2) Analysis—identifying learner characteristics, instructional problems, and professional development needs; (3) Planning—designing flexible and inclusive learning plans, media, technology, and assessment approaches; (4) Coaching & Practice—implementing instructional plans in authentic contexts with observation, coaching, and feedback; and (5) Reflection—analysing outcomes, identifying strengths and areas for improvement, and linking reflection to the next cycle of development. The five stages were designed as a continuous coaching cycle integrating practice, feedback, and reflective learning.

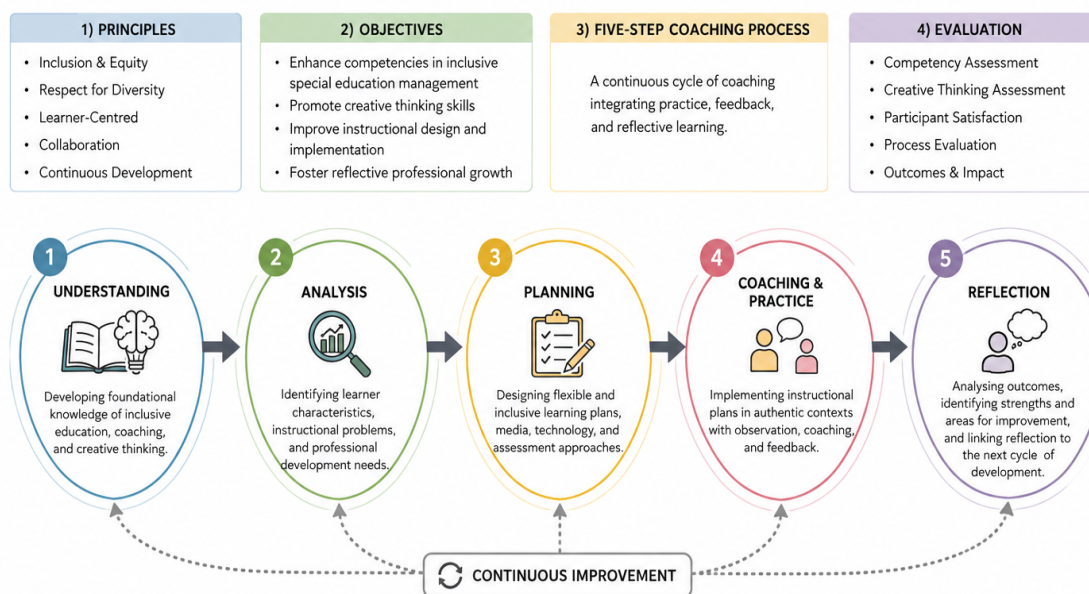


Figure 2. Conceptual structure and five-step coaching process of the developed model.

Expert evaluation indicated that the overall appropriateness of the coaching model was at the highest level ($M = 4.61$, $SD = 0.52$). Among the four components, the coaching process received the highest evaluation ($M = 4.70$), followed by the principles of the model ($M = 4.67$), objectives ($M = 4.60$), and evaluation procedures ($M = 4.47$).

4.3 Effectiveness of the Coaching Model

4.3.1 Inclusive Special Education Management Competencies

Participants demonstrated substantial improvement in inclusive special education management competency following implementation of the coaching model. The overall mean score increased from $M = 2.83$ ($SD = 0.43$) before implementation to $M = 4.32$ ($SD = 0.37$) after implementation. A paired-samples t-test indicated that the difference was statistically significant, $t = 15.62$, $p < .05$.

Table 1. Pretest and posttest inclusive special education management competency scores

Measure	Pretest M (SD)	Posttest M (SD)	t	p
Overall competency	2.83 (0.43)	4.32 (0.37)	15.62	< .05

All five competency dimensions showed significant improvement. The highest post-intervention mean was found for organisation of learning activities ($M = 4.38$), followed by learning design ($M = 4.35$). Improvements were also evident in learner analysis, use of media and technology, and measurement and assessment.

These findings indicate that the coaching model enhanced participants' competencies across all major dimensions of inclusive special education management.

4.3.2 Creative Thinking Skills

Creative thinking skills also increased significantly following implementation of the coaching model. The overall mean increased from $M = 2.85$ ($SD = 0.46$) before implementation to $M = 4.31$ ($SD = 0.37$) after implementation, with a statistically significant difference, $t = 15.07$, $p < .05$.

Table 2. Pretest and posttest creative thinking skills scores

<i>Measure</i>	<i>Pretest M (SD)</i>	<i>Posttest M (SD)</i>	<i>t</i>	<i>p</i>
<i>Overall creative thinking</i>	2.85 (0.46)	4.31 (0.37)	15.07	< .05

All four dimensions of creative thinking improved significantly. Originality recorded the highest post-intervention mean ($M = 4.34$), followed by Fluency ($M = 4.31$), Flexibility ($M = 4.29$), and Elaboration ($M = 4.28$).

These results suggest that the coaching process supported not only professional competency development but also participants' ability to generate, adapt, and elaborate alternative instructional approaches.

4.4 Qualitative Findings on Professional Practice

Qualitative evidence from observations, reflective records, interviews, and focus-group discussions supported the quantitative findings. Three major themes emerged.

First, participants reported that the coaching model helped them develop a more systematic approach to instructional planning and implementation. They became more capable of linking learner analysis, instructional design, learning activities, and assessment into a coherent process.

Second, coaching promoted deeper professional learning through questioning, feedback, and reflection. Participants indicated that the coaching process encouraged them to analyse their own practice rather than simply follow prescribed teaching procedures. This led to improved understanding, greater awareness of instructional strengths and limitations, and more flexible responses to learner diversity.

Third, participants were able to transfer the model into authentic classroom practice. Observational data showed increased use of differentiated activities, group work, educational games, simulations, and diverse media and technologies. Participants also adapted instructional explanations, classroom environments, learning time, and levels of support according to individual learner needs. These changes were accompanied by increased confidence in inclusive teaching and greater willingness to experiment with new instructional approaches.

Examples of this transfer included participant-designed or adapted game-based media such as the Thai reading screening board game with QR-linked screening and the QRMaths number-wheel activity (Figure 1). These products illustrated how participants translated learner analysis into differentiated, visually accessible, and technology-supported instructional activities. They also provided concrete evidence of creative professional practice through the generation and elaboration of alternative learning approaches.

4.5 Participant Satisfaction and Final Model Refinement

The final evaluation demonstrated a high level of acceptance and practical feasibility. Participants reported an overall satisfaction score of $M = 4.71$ ($SD = 0.46$), representing the highest level of satisfaction. The highest-rated dimension concerned the coach/facilitator ($M = 4.77$), followed by practical application ($M = 4.70$), while content and the coaching process both received similarly high ratings ($M = 4.69$).

Table 3. Expert evaluation and participant satisfaction with the coaching model

<i>Evaluation</i>	<i>M</i>	<i>SD</i>	<i>Interpretation</i>
<i>Expert evaluation of model appropriateness</i>	4.61	0.52	Highest
<i>Participant satisfaction</i>	4.71	0.46	Highest

Qualitative evaluation further indicated that participants regarded the model as clear, systematic, supportive of deep learning, and applicable to authentic inclusive classrooms. The final model was therefore refined in four major areas: additional examples of inclusive learning activities, clearer implementation guidelines, improved supporting assessment and reflection tools, and greater flexibility in implementation according to school context and teacher workload.

The refinement process resulted in a more practical model that could be implemented through both on-site and online coaching, while retaining the five-stage coaching cycle. The final model therefore combined systematic structure with sufficient flexibility for adaptation across different educational settings.

Overall, the findings demonstrate that the developed coaching model was appropriate, effective, and practically applicable. It significantly enhanced both inclusive special education management competencies and creative thinking skills, while also supporting reflective practice, professional confidence, and continuous improvement among mentor teachers and pre-service teachers.

5. Discussion

5.1 Theoretical and Practical Contributions

The findings indicate that the developed coaching model effectively enhanced both inclusive special education management competencies and creative thinking skills among mentor teachers and pre-service teachers. One important explanation for this result is that the model addressed the gap between theoretical knowledge and authentic classroom practice. Although participants possessed some prior understanding of inclusive education, the initial needs analysis showed that they experienced difficulties applying such knowledge to learner analysis, instructional adaptation, differentiated learning activities, appropriate media and technology use, and flexible assessment. This finding reflects a persistent challenge in inclusive education, where knowledge of principles alone may not be sufficient to support diverse learners unless teachers are able to translate those principles into context-responsive classroom practice.

The effectiveness of the model can also be explained by its practice-based and reflective orientation. Rather than relying primarily on conventional training or knowledge transmission, the coaching process involved analysis of authentic instructional problems, planning, classroom practice, feedback, and reflection. This is consistent with Knight's (2018) view that effective instructional coaching should be continuous, structured, collaborative, and closely connected to actual teaching practice. The model therefore enabled participants to test ideas in real educational settings, receive feedback, examine learner responses, and continuously improve their instructional decisions.

Another important finding was the improvement in participants' creative thinking skills. The coaching process encouraged participants to generate alternative approaches, modify learning activities, experiment with different instructional media, and respond flexibly to individual learner differences. These findings suggest that creativity in inclusive teaching is not an isolated cognitive skill but an important component of adaptive professional practice. This is consistent with the OECD (2019) emphasis on creativity and problem solving as essential competencies for twenty-first-century learning and professional practice.

Reflective practice also appeared to be a central mechanism underlying the effectiveness of the model. Participants became more capable of identifying strengths and weaknesses in their own teaching, linking instructional decisions with learner responses, and planning subsequent improvement. The findings are consistent with Kolb's (1984) experiential learning perspective, in which meaningful professional learning emerges through the interaction of concrete experience, reflection, conceptualisation, and subsequent action. In the present study, coaching and reflection transformed classroom experience into a continuous cycle of professional learning.

Qualitative findings further demonstrated that the model influenced actual teaching behaviour rather than merely increasing participants' knowledge. Participants reported greater confidence in inclusive teaching, increased use of flexible and differentiated activities, greater willingness to experiment with new instructional approaches, and improved ability to reflect systematically on their own practice. The combination of quantitative improvement and observable changes in teaching practice strengthens the evidence that the coaching model functioned as a mechanism for professional development rather than simply as a short-term training intervention.

Overall, the findings suggest that the developed coaching model was effective because it integrated practice-based learning, continuous coaching, reflective practice, collaborative learning, and creative problem solving within a single professional development process. These elements enabled mentor teachers and pre-service teachers to connect theoretical knowledge with authentic inclusive classroom practice while continuously adapting their professional decisions to learner diversity.

5.2 Limitations

The study was conducted within a specific group of mentor teachers and pre-service teachers and therefore the generalisability of the findings should be considered with caution. In addition, the intervention focused on relatively short-term outcomes; the study did not establish whether improvements in competency and creative thinking were sustained over extended periods.

A further limitation is the absence of a comparison or control group. Because the effectiveness evaluation used a single-group pretest-posttest design, alternative explanations such as maturation, concurrent professional experiences, repeated testing, or other contextual influences cannot be fully ruled out. Accordingly, the statistically significant improvements demonstrate within-group change over the intervention period but should not be interpreted as conclusive causal effects attributable solely to the coaching model. Future studies should employ comparison-group, quasi-experimental, or experimental designs where feasible to strengthen causal inference.

5.3 Implications for Practice and Future Research

The developed coaching model may be applied as a professional development framework in schools implementing inclusive education. In particular, mentor teachers can be prepared to function as coaches who provide sustained professional support to pre-service teachers through observation, questioning, feedback, and reflective dialogue.

The model may also be integrated into teacher practicum and professional experience programmes in teacher education institutions. This would enable pre-service teachers to develop inclusive teaching competencies through direct application rather than relying exclusively on university-based theoretical preparation. The source chapter specifically recommends integrating coaching into teacher preparation and developing mentor teachers as school-based coaches.

Because school contexts differ in available time, workload, resources, and professional support, the model should be implemented flexibly. The study suggests that blended or online coaching may be used alongside face-to-face coaching where appropriate.

Future research should therefore investigate the long-term effects of the coaching model through follow-up studies conducted six months or one year after implementation. Further studies should also include more diverse groups of teachers, educational levels, and school contexts, including rural and secondary education settings.

Future development could additionally examine the integration of online coaching and blended coaching, as well as other factors that may influence professional development outcomes, such as motivation, instructional leadership, school culture, and organisational support.

6. Conclusion

This study developed and evaluated a coaching model designed to enhance inclusive special education management competencies and promote creative thinking skills among mentor teachers and pre-service teachers in schools within the service areas of Phranakhon Rajabhat University.

The study demonstrated that participants required professional development particularly in learner analysis, inclusive instructional design, flexible learning activities, educational media and technology, and assessment. They also expressed a strong preference for development approaches involving authentic practice, reflection, collaborative learning, and continuous professional support.

In response to these needs, a process-based coaching model was developed integrating principles, objectives, coaching activities, reflective practice, and evaluation. The model enabled participants to engage in a continuous cycle of professional learning and was found to be appropriate and applicable to inclusive educational contexts.

Implementation of the model resulted in improvements across all major dimensions of inclusive special education management competency, as well as in fluency, flexibility, originality, and elaboration in creative thinking. Participants also demonstrated greater confidence, more flexible instructional design, and stronger capacity to adapt learning experiences to learner diversity.

The findings therefore support the use of coaching as a systematic mechanism for connecting teacher preparation, school-based professional development, inclusive education, and creative professional practice.

Funding: There is no funding to report.

Conflicts of Interest: The authors declare no conflicts of interest regarding the publication of this paper.

References:

- Ainscow, M. (2020). Promoting inclusion and equity in education: Lessons from international experiences. *Nordic Journal of Studies in Educational Policy*, 6(1), 7-16.
- Black, P., & Wiliam, D. (2018). Classroom assessment and pedagogy. *Assessment in Education: Principles, Policy & Practice*, 25(6), 551-575.
- CAST. (2018). Universal Design for Learning Guidelines version 2.2. CAST.
- Costa, A. L., & Garmston, R. J. (2016). *Cognitive coaching: Developing self-directed leaders and learners* (3rd ed.). Rowman & Littlefield.
- Florian, L., & Camedda, D. (2020). Enhancing teacher education for inclusion. *European Journal of Teacher Education*, 43(1), 4-8.

- Grant, A. M. (2017). The third generation of workplace coaching: Creating a culture of quality conversations. *Coaching: An International Journal of Theory, Research and Practice*, 10(1), 37-53.
- Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The Four C model of creativity. *Review of General Psychology*, 13(1), 1-12.
- Knight, J. (2018). The Impact Cycle: What instructional coaches should do to foster powerful improvements in teaching. Corwin.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
- Kraft, M. A., Blazar, D., & Hogan, D. (2018). The effect of teacher coaching on instruction and achievement: A meta-analysis of the causal evidence. *Review of Educational Research*, 88(4), 547-588.
- OECD. (2019). *PISA 2021 creative thinking framework*. Organisation for Economic Co-operation and Development.
- Torrance, E. P. (1974). *Torrance Tests of Creative Thinking*. Personnel Press.
- UNESCO. (2020). *Global education monitoring report 2020: Inclusion and education: All means all*. UNESCO.
- Whitmore, J. (2017). *Coaching for performance: The principles and practice of coaching and leadership* (5th ed.). Nicholas Brealey Publishing.