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IMPROVING PROSPECTIVE PRESCHOOL TEACHERS' METHODOLOGICAL COMPETENCE IN DEVELOPING CHILDREN'S SPEECH THROUGH DIGITAL EDUCATIONAL TOOLS

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Abstract. Digital tools offer new possibilities for supporting young children's speech, but research shows that their value depends on how adults use them: passive screen exposure can reduce opportunities for conversation, whereas well-chosen materials used together with an adult can enrich it. Teachers therefore need not only technical skills but the ability to subordinate a digital tool to a speech-development goal. Drawing on the TPACK framework, this study conceptualises methodological competence as the integration of linguistic-methodological, technological, integrative-design and reflective-evaluative components. A four-stage model – critical evaluation of digital tools, design of speech activities, trial in practice and reflection – was implemented in preschool teacher retraining courses at a regional center of pedagogical skills in Uzbekistan and compared with a conventional course in which digital technologies and speech methodology were taught in separate modules. Data were collected through questionnaires, a knowledge test, tool-evaluation tasks, activity plans, observation during placements and reflective journals. At the outset, trainees' technological knowledge was relatively good, but they seldom linked digital tools to speech-development aims. By the end of the course, trainees in the experimental group selected tools on the basis of the activity's speech goal, limited screen time to a few minutes and used the material as a starting point for conversation, retelling and play. Digital storytelling, in which children's own drawings and recorded narratives were assembled into e-books, proved

particularly effective in increasing children's willingness to speak. The model requires no additional teaching hours and can be adapted for in-service training.

Keywords: methodological competence; children's speech development; digital educational tools; prospective preschool teachers; TPACK; digital storytelling; teacher retraining.

1. INTRODUCTION

Today's preschool children are growing up in a digital environment. Many handle tablets and phones before they can speak fluently, repeat lines from cartoons and ask questions of voice assistants. This places a twofold task before the preschool teacher. On the one hand, digital tools open new possibilities for developing children's speech: an interactive fairy tale, a story recorded in the child's own voice or a game for distinguishing sounds can bring an activity to life. On the other hand, passive time in front of a screen can reduce opportunities for live conversation and hinder speech development. The World Health Organization (2019) recommends that sedentary screen time for children aged two to four should not exceed one hour per day. The question, then, is not whether to use digital tools, but when, how and for what purpose.

In Uzbekistan, the "Digital Uzbekistan – 2030" strategy (Presidential Decree PF-6079, 2020) makes the introduction of digital technologies a priority at all levels of education, while the national preschool curriculum "Ilk qadam" (First Step) identifies speech, communication and early literacy as a distinct area of child development. Bringing these two requirements together in practice depends on the teacher's methodological preparation.

International research offers important guidance here. A meta-analysis by Takacs, Swart and Bus (2015) found that electronic storybooks whose animation, music and sound effects are congruent with the story benefit children's vocabulary and story comprehension, while distracting "bells and whistles" reduce these benefits. Hirsh-Pasek et al. (2015) proposed four principles for judging the

educational value of an app: children should be active, engaged, involved in meaningful content and supported in social interaction. These studies consistently emphasise the role of the adult. When children explore digital material together with an adult and talk about it, the benefits for language are considerably greater (Neumann & Neumann, 2014).

The TPACK framework proposed by Mishra and Koehler (2006) provides a useful lens for understanding teachers' readiness for this work. It holds that effective use of technology requires teachers to integrate three kinds of knowledge rather than apply them separately: content knowledge (here, children's speech and its developmental patterns), pedagogical knowledge (methods of speech development) and technological knowledge. The European DigCompEdu framework similarly defines educators' digital competence not by technical skills but by the ability to select, create and adapt digital resources to learning aims (Redecker, 2017). Methods of developing preschool children's speech have been elaborated in detail by Alekseeva and Yashina (2000), Ushakova (2001) and, in the Uzbek context, Qodirova and Qodirova (2019).

Our observations in retraining courses at a regional center of pedagogical skills showed that most trainees used digital tools confidently in everyday life. When they brought them into speech activities, however, two kinds of mistakes were common. First, the digital tool served the activity's appearance rather than its aim: for example, a fifteen-minute cartoon was shown, followed by one or two general questions, and the activity ended there. Second, tools were chosen without regard to the children's age, the availability of Uzbek-language content or whether the tool encouraged children to speak. In other words, trainees had technological knowledge, but it was not connected to the methodology of speech development.

The aim of this study was to design and test a model for improving prospective preschool teachers' methodological competence in developing children's speech through digital educational tools. The objectives were: (1) to define the components

and criteria of this competence; (2) to develop criteria for selecting digital tools suitable for speech development; and (3) to implement the model in a retraining course and analyse its outcomes.

2. METHODS

2.1. Setting and participants. The study was conducted in 2025–2026 in preschool education retraining courses at the Fergana Regional Center of Pedagogical Skills, with an experimental group (EG) and a control group (CG). Participants held higher education degrees in education or in other fields and varied in age and professional experience. Participation was voluntary, and all data were processed anonymously.

2.2. Components and instruments. Drawing on the TPACK framework, methodological competence was assessed across four components: **linguistic-methodological** (knowledge of age-related features of children's speech and of methods for developing sound culture, vocabulary, grammatical structure and connected speech); **technological** (knowledge of the possibilities of digital tools and ability to use them); **integrative-design** (ability to select a digital tool that fits the specific aim of a speech activity and integrate it coherently); and **reflective-evaluative** (ability to analyse how a digital tool affected children's verbal activity).

Data were collected through a questionnaire, a knowledge test, evaluation tasks (for example, "Could this app be used in a speech activity with five-year-olds? Justify your answer"), trainees' activity plans, observation of sessions conducted during placements and reflective journals. Activity plans and observations were scored independently by two lecturers using a rubric prepared in advance.

2.3. The model. In the EG, the model was implemented in four stages.

Critical evaluation. Trainees jointly analysed apps, cartoons, audio stories and e-books designed for children, using a short checklist we adapted from the principles of Hirsh-Pasek et al. (2015): What does the child do – speak, or only tap? Is the material in Uzbek and appropriate for the child's age? Do sound and animation

reveal the content or distract from it? Once the material ends, is there something left to talk about? Many trainees found these questions unexpected. When a popular "word-learning" app was analysed, for instance, it turned out that the child's entire activity consisted of tapping pictures, without saying a single word.

Design. Trainees developed activity plans that included a digital tool for each area of speech development. For **sound culture of speech**, children identified natural and animal sounds and listened back to recordings of their own pronunciation. For **vocabulary**, trainees created interactive games with Uzbek thematic vocabulary on LearningApps.org and Wordwall. For **connected speech**, they used digital storytelling (Robin, 2008): children drew pictures, the teacher photographed them and assembled them into a booklet in an application such as Book Creator, and each page was accompanied by a recording of the child telling the story. The guiding rule in design was "the screen is a reason to talk": digital material should last no more than a few minutes and should always be followed by questions and answers, retelling or role play.

Trial in practice. During their placements, trainees conducted their activities in partner preschools. Each session was observed by a fellow trainee, who focused mainly on one question: who talked most during the activity – the teacher, the screen or the children? In digital storytelling sessions, children's stories were recorded, and these recordings later served as material for following changes in children's speech.

Reflection. Trainees discussed recordings and observation notes in groups, kept reflective journals and, at the end of the course, compiled an e-portfolio of their most successful activity plans, interactive games and digital booklets.

In the CG, the course followed the existing curriculum, in which digital technologies and speech-development methods were studied in separate modules.

3. RESULTS

The initial assessment showed a similar picture in both groups. Trainees' technological knowledge was relatively good: most could prepare a presentation,

find a video and use popular apps. Linguistic-methodological knowledge was moderate. The lowest scores were on the integrative-design component. In most initial activity plans, the digital tool was placed at the beginning of the activity to "capture interest" or at the end as a "break", and was not connected to the speech-development task. In evaluation tasks, trainees judged apps mainly by their appearance ("colourful", "children will like it").

By the end of the course, clear qualitative changes were evident in the EG's plans and sessions. Trainees began to select a digital tool on the basis of the activity's speech aim and could justify their choice. Screen time in their activities was usually limited to three to five minutes, with the rest of the time devoted to conversation, retelling and play based on the material. According to observation notes, children's verbal activity increased in these sessions and the teacher's monologue became shorter. In evaluation tasks, trainees began to analyse apps by asking "What will the child say?" and "What conversation can follow?" In the CG, technological and linguistic-methodological knowledge also grew, but the ability to integrate them within a single activity developed less.

Digital storytelling proved the most engaging and effective method for trainees. They saw that when children knew they were "making a book" with their own drawings and voices, they were far more eager to speak. Even children who were usually silent tried to tell their stories so that others could hear their page. One trainee wrote in her journal: "I used to think a cartoon was a good digital tool. Now I understand that the best digital material is what the child says himself. The quietest girl in the group re-recorded the story in her booklet three times because she wanted to 'say it more beautifully'."

Some difficulties also emerged. Because high-quality digital content in Uzbek is scarce, trainees often had to create materials themselves. A shortage of equipment in some preschools also had to be taken into account when planning activities.

4. DISCUSSION

The results indicate that methodological competence in using digital tools cannot be developed by teaching technological knowledge and speech-development methods separately. In the CG, knowledge in both areas grew, but the ability to combine them in one activity developed less. This is consistent with Mishra and Koehler's (2006) argument that a new, qualitatively different kind of knowledge emerges where technological, pedagogical and content knowledge intersect. In the EG, this intersection was practised deliberately.

The critical evaluation stage proved more important than expected. Once trainees realised through their own analysis that an app's visual appeal and its educational value are not the same thing, subsequent design work became far more purposeful. This echoes the conclusion of Takacs et al. (2015) that the effect of digital material is determined not by its technical sophistication but by its congruence with the content. The effectiveness of digital storytelling can be explained by the child's active role as creator and speaker: the digital tool records the child's speech, makes it "visible" and encourages the child to speak again.

The principle "the screen is a reason to talk" is consistent both with the WHO (2019) recommendations and with evidence that joint engagement of adult and child with digital material strengthens its benefits for language (Neumann & Neumann, 2014). The teacher's task is not to keep the child in front of the screen but to build live conversation around what is on it. Presenting this principle to trainees as a simple, memorable rule proved helpful in practice.

The study has limitations. It was conducted at a single center of pedagogical skills over a limited period, and groups were not randomly assigned. We mainly assessed trainees' methodological competence; observations of changes in children's speech relate to a short placement period and need to be examined in a longer-term study. In addition, the limited availability of Uzbek-language digital content should be considered when transferring the model to other settings.

In practical terms, the model requires no additional teaching hours: it is implemented by integrating the course modules on speech-development methodology and digital technologies in education. The collection of Uzbek-language interactive games and digital booklets created by trainees could be shared with preschool organisations as an open methodological resource.

5. CONCLUSION

Prospective preschool teachers' methodological competence in developing children's speech through digital tools is an integrated quality comprising linguistic-methodological, technological, integrative-design and reflective-evaluative components. At its core lies the ability to subordinate a digital tool to the specific aim of a speech activity. A model consisting of critical evaluation, design, trial in practice and reflection developed this ability effectively. Trainees learned to use digital tools to enrich, rather than replace, live communication with children. Digital booklets based on children's own stories emerged as a particularly promising way of increasing children's verbal activity. Future research will test the model in other regions and in in-service courses for practising teachers and will examine the long-term effect of digital storytelling on children's connected speech.

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