

Original Research

Received 01 May 2026

Revised 12 June 2026

Accepted 26 September 2026

Natural Resources for Human
Health 2026, Vol. 6 (5): 1305–1311

KEYWORDS:

development of an online learning
package; teacher competencies
affecting student learning; teacher
students

The Development of Online Learning Packages to Enhance Teachers' Competencies that Affect Student Learning for Teacher Students

Varinporn Funfuengfu^{1*}, Taporn Yimsopa², Tanawat Phupradit³, Phrakhrusuphattharasilasophon⁴

^{1,2,3}Lopburi College of Dramatic Arts, Bunditpatanasilpa Institute, Thailand
Mahamakut Buddhist University, Mahavajiralongkorn Rajavidyalaya Campus
Corresponding author's email: Dr.Mam2512@gmail.com

ABSTRACT: This research aimed to: (1) investigate the needs for enhancing teacher competencies that affect student learning for teacher students; (2) develop an online learning package to enhance teacher competencies that affect student learning for teacher students, with an efficiency criterion of 80/80; (3) examine the effects of using the online learning package to enhance teacher competencies that affect student learning for teacher students; and (4) evaluate students' satisfaction with the online learning package. The research was conducted in three phases. Phase 1 investigated the needs for enhancing teacher competencies that affect student learning. The participants comprised two groups: (1) 21 instructors who teach professional teacher education courses in institutions affiliated with Bunditpatanasilpa Institute, Mahamakut Buddhist University, Mahavajiralongkorn Rajavidyalaya Campus, Thepsatri Rajabhat University, Phranakhon Si Ayutthaya Rajabhat University, Chandrakasem Rajabhat University, and Saint John's University; and (2) 400 first- to fourth-year undergraduate students in the Bachelor of Education program in the 2026 academic year at institutions affiliated with Bunditpatanasilpa Institute, Ministry of Culture, selected through multistage sampling. The research instruments were an interview form with an Index of Item-Objective Congruence (IOC) of 1.00 for every item and a questionnaire with a reliability coefficient of 0.97. Phase 2 involved developing the online learning package to meet the 80/80 efficiency criterion. Its appropriateness was examined through a focus-group discussion with experts and an evaluation form with an IOC of 1.00 for every item. The package was then tested for efficiency. Phase 3 examined the effects of using the online learning package and evaluated students' satisfaction. The experimental participants were 60 third-year Bachelor of Education students in the 2026 academic year from Lopburi College of Dramatic Arts and Suphan Buri College of Dramatic Arts, Bunditpatanasilpa Institute, Ministry of Culture, selected through multistage sampling. The instruments included a teacher-competency test with item difficulty ranging from 0.40 to 0.60, item discrimination indices of at least 0.21, and reliability of 0.89, as well as a satisfaction questionnaire with reliability of 0.92. Data were analyzed using percentages, means, standard deviations, a t-test, and content analysis. The findings revealed that: (1) teacher competencies affecting student learning comprised learning management, instructional design and lesson-plan development, classroom management, measurement and evaluation, learner development, and teacher leadership. Overall, students' need for enhancement of these competencies was high (mean = 4.39, S.D. = 0.55). (2) The online learning package consisted of instructions, learning objectives, a pretest, six learning topics, subtopic pretests, learning content, activity sheets, subtopic posttests, a posttest, a satisfaction questionnaire, and communication channels, presented through Google Sites. Experts rated its appropriateness at the highest level (mean = 4.64, S.D. = 0.55). The

three-stage efficiency results (E1/E2) were 76.67/78.89, 80.56/81.85, and 82.78/84.11, respectively. (3) Students' mean competency score after using the online learning package (mean = 23.13, S.D. = 5.42) was higher than before using it (mean = 12.03, S.D. = 6.10), with statistical significance at the .05 level. Overall satisfaction was at the highest level (mean = 4.80, S.D. = 0.35).

1. INTRODUCTION

A strong education system depends on teacher quality. Teacher quality is therefore an important indicator of educational quality because teachers are responsible for developing learners in terms of knowledge, thinking, and desirable characteristics for living in society. If teachers possess high levels of competency, learners are also likely to be developed into high-quality individuals because learner quality depends on teacher competency (McKinsey, 2007; Channuwong et al., 2026).

Teacher competencies in various areas affect student learning in many ways. Importantly, they help learners develop positive feelings toward learning and school, become enthusiastic, and devote themselves fully to learning according to their potential, which subsequently contributes to higher academic achievement. Research related to teaching and learning has found that four teacher competency areas—classroom instructional methods, classroom management, formative assessment, and teachers' personal competencies (soft skills)—are among the competencies that most strongly affect student learning. Therefore, teachers should be developed in these competency areas to improve student learning outcomes and enhance educational quality. Developing teacher competencies also helps teachers become effective professionals and sustain their careers (Intraprawat et al., 2022; Photchanachan et al., 2026; Kitrungrueang & Sirisamphan, 2018).

At present, technology is a major factor affecting education and has changed traditional educational formats. It has led to the development of various forms of teaching and learning, making instruction faster and more convenient. In particular, new technological media have increasingly been applied to teaching and learning. Learning packages are one approach for developing learners' learning effectively, reducing teachers' workload, and supporting teaching and learning. Related studies have reported improved learning achievement and high student satisfaction with learning activities (Phimpila, 2023; Janyakorn, 2020).

Learning packages can be presented as electronic files, instructional videos, and various online instructional media, enabling learners to access content and understand it more easily (Na Lamphun, 2017; Sirathanakul et al., 2023). Web-Based Instruction is one form of instructional media that applies web technology to teaching and learning processes to improve effectiveness and address limitations involving time, place, and learning contexts. It also supports assessment and feedback by using the potential and capabilities of the Internet, allowing learning to take place anytime and anywhere.

Google Sites, a Google service for creating free websites, is easy to use and allows flexible customization. It can support teachers in developing web-based instruction by linking content and various resources, including audio and video files, which students can easily access regardless of their location or time, thereby supporting self-directed learning (Srichim & Samruayruen, 2016; Fei et al., 2026; Katangchol et al., 2023).

Based on the importance of these issues, the researchers were interested in developing an online learning package to enhance teacher competencies that affect student learning for teacher students. Google Sites was selected for presenting the online learning package because it is easy to use and free of charge. The package was intended to stimulate teacher students' interest in self-development, helping them become good teachers with moral and ethical qualities and the ability to develop learners, thereby preparing them for the teaching profession and enabling them to further develop their future students.

2. RESEARCH OBJECTIVES

1. To investigate the needs for enhancing teacher competencies that affect student learning for teacher students.
2. To develop an online learning package to enhance teacher competencies that affect student learning for teacher students, with an efficiency criterion of 80/80.
3. To examine the effects of using the online learning package to enhance teacher competencies that affect student learning for teacher students.

4. To evaluate satisfaction with the online learning package to enhance teacher competencies that affect student learning for teacher students.

3. RESEARCH METHODOLOGY

This study employed a Research and Development (R&D) approach using mixed methods, combining qualitative and quantitative research, together with experimental research. The research scope was divided into three phases:

1. Phase 1: Investigation of the needs for enhancing teacher competencies that affect student learning for teacher students.
2. Phase 2: Development of an online learning package to enhance teacher competencies that affect student learning to meet the 80/80 efficiency criterion.
3. Phase 3: Examination of the effects of using the online learning package and evaluation of satisfaction with the package.

3.1 Population and Samples

The interview target group consisted of 21 instructors who teach professional teacher education courses in institutions affiliated with Bunditpatanasilpa Institute, including one Faculty of Education, 12 Colleges of Dramatic Arts, and three Colleges of Fine Arts, as well as Mahamakut Buddhist University, Mahavajiralongkorn Rajavidyalaya Campus, Thepsatri Rajabhat University, Phranakhon Si Ayutthaya Rajabhat University, Chandrakasem Rajabhat University, and Saint John's University. One instructor from each institution was purposively selected. Participants had at least five years of experience teaching teacher students, held at least a master's degree, and agreed to participate in the interviews.

The population consisted of 2,282 first- to fourth-year Bachelor of teacher students in the 2020 academic year at institutions affiliated with Bunditpatanasilpa Institute, Ministry of Culture.

The sample for investigating the needs for enhancing teacher competencies consisted of 400 first- to fourth-year Bachelor of Education students in the 2026 academic year at institutions affiliated with Bunditpatanasilpa Institute, Ministry of Culture, selected through multistage sampling.

For efficiency testing of the online learning package, the samples were: 3 third-year students for one-to-one testing, 9 third-year students for small-group testing, and 60 third-year students for field testing. For the experimental study, 60 third-year Bachelor of Education students from Lopburi College of Dramatic Arts and Suphan Buri College of Dramatic Arts participated, selected through multistage sampling.

3.2 Data Collection

Phase 1: The researchers reviewed concepts and theories related to teacher competencies affecting student learning from documents and research studies. The components were analyzed and a draft framework was verified through in-depth interviews with 21 experts in teacher education. The interview form had an IOC of 1.00 for every item. A teacher-competency questionnaire was developed and reviewed by five experts, with an IOC of 1.00 for every item. It was pilot-tested with 30 students who were not part of the sample, producing an overall reliability coefficient of 0.97. The questionnaire was then administered to 400 students. Data were analyzed using means, standard deviations, and content analysis.

Phase 2: The results from Phase 1 were used to develop the online learning package. Seven experts examined the appropriateness and consistency of its components through a focus-group discussion. The package was revised and evaluated using a five-point rating scale with an IOC of 1.00 for every item. The package was then tested for efficiency through one-to-one, small-group, and field testing using the E1/E2 efficiency criterion.

Phase 3: The researchers conducted an experimental study using a one-group pretest-posttest design with 60 third-year students. The experiment lasted four weeks, during which students independently studied the online learning package through Google Sites. The data-collection instruments were a teacher-competency test (difficulty 0.40–0.60; item discrimination ≥ 0.21 ; reliability 0.89) and a satisfaction questionnaire (reliability 0.92). Data were analyzed using means, standard deviations, a t-test, and content analysis.

4. RESULTS

4.1 Components of Teacher Competencies Affecting Student Learning

The components comprised learning management, instructional design and lesson-plan development, classroom management, measurement and evaluation, learner development, and teacher leadership.

4.2 Needs for Enhancement

Overall, students reported a high level of need for enhancement of teacher competencies affecting student learning (mean = 4.39, S.D. = 0.55).

4.3 Development and Efficiency of the Online Learning Package

The online learning package included instructions for use, learning objectives, a pretest, six learning topics—learning management; instructional design and lesson-plan development; classroom management; measurement and evaluation; learner development; and teacher leadership—along with subtopic pretests, content, activity sheets, subtopic posttests, a posttest, a satisfaction questionnaire, and communication channels. The package was presented through Google Sites. Experts rated its appropriateness at the highest level (mean = 4.64, S.D. = 0.55).

The efficiency results were as follows: one-to-one testing ($n = 3$), $E1/E2 = 76.67/78.89$; small-group testing ($n = 9$), $E1/E2 = 80.56/81.85$; and field testing ($n = 60$), $E1/E2 = 82.78/84.11$. Thus, the small-group and field-testing results met the specified 80/80 criterion.

4.4 Effects of Using the Online Learning Package

The mean teacher-competency score before using the package was 12.03 (S.D. = 6.10), while the mean score after using the package was 23.13 (S.D. = 5.42). The post-use mean was significantly higher than the pre-use mean at the .05 level.

4.5 Student Satisfaction

Overall satisfaction was at the highest level (mean = 4.80, S.D. = 0.35). Satisfaction by dimension was also at the highest level: format (mean = 4.75, S.D. = 0.41), presentation (mean = 4.79, S.D. = 0.40), content (mean = 4.81, S.D. = 0.37), and benefits received (mean = 4.87, S.D. = 0.33). The highest-rated dimension was benefits received.

5. CONCLUSIONS AND DISCUSSION

5.1 Teacher Competencies Affecting Student Learning

The identified competencies consisted of learning management, instructional design and lesson-plan development, classroom management, measurement and evaluation, learner development, and teacher leadership. These components are consistent with important teacher competency components identified by educational agencies and scholars (Office of the Education Council, 2008; Office of the Basic Education Commission, 2010; Ekwanwang, 2017; Kijrungrueang & Sirisamphan, 2018; Phuchamni, 2021; Wongsakorn, 2023; Phoembun et al., 2021). The researchers reviewed relevant theories and verified the components with experts in teacher education. The findings also correspond to Chaimatee Jaikumkao (2018), who reported a positive statistically significant relationship between teacher competencies and students' learning skills at the .01 level. Students' overall need for competency enhancement was high (mean = 4.39, S.D. = 0.55). Students reported high needs across all six areas. The most preferred learning format was self-directed study through an online learning package, with a preferred learning duration of 20 hours. This may be because teacher students must undertake professional teaching experiences in accordance with professional standards, leading them to seek self-development and preparation before practicum. The development of online learning packages should therefore correspond to learners' needs and individual differences.

5.2 Development and Efficiency of the Online Learning Package

The online learning package contained seven major components: instructions, learning objectives, a pretest, six learning topics, a posttest, a satisfaction questionnaire, and communication channels. Each topic included a pretest, content, an activity sheet, and a posttest. Experts rated the package at the highest level of appropriateness (mean = 4.64, S.D. = 0.55). The one-to-one trial with three students yielded $E1/E2 = 76.67/78.89$, below the 80/80 criterion. After revision, the small-group trial with nine students yielded 80.56/81.85 and the field trial with 60 students yielded 82.78/84.11, both meeting the specified criterion. This development process followed the efficiency-testing procedure for instructional packages and was consistent with related research using Google Sites.

5.3 Effects and Satisfaction

Students' mean competency score after using the online learning package was significantly higher than before use at the .05 level. The package did not merely transmit theoretical content; it also provided opportunities for reflection, activities, and problem solving through digital simulations. These activities supported the development of knowledge, practical skills, and self-confidence. This is consistent with the competency concepts of McClelland (1973) and Spencer and Spencer (1993), which distinguish visible components such as knowledge and skills from underlying characteristics such as personal attributes, attitudes, and self-concept.

The online package also allowed students to learn at their own pace, revisit content, and repeat practice where needed. Content was sequenced from simple to complex and included knowledge, images, videos, and interesting situations. Related studies cited in the source similarly reported improved learning achievement following web-based or digital learning interventions, including studies by Phetseangern (2017), Saengchan (2017), García-Morales et al. (2021), and Falloon (2020).

Overall satisfaction was at the highest level (mean = 4.80, S.D. = 0.35). This may be attributable to the package being designed according to students' needs, combining learning with practical activities, providing pretests and posttests for each unit, and giving immediate test results. Google Sites also made the package easy to access from different places and at different times, allowing students to select units according to their preferences.

6. Recommendations

6.1 Recommendations for Practice

1. Higher-education instructors should use the online learning package as part of blended learning, using the package to build foundational knowledge and support individual practice while using classroom time for discussion and in-depth reflection.
2. The design and development of online learning packages should incorporate simulations and in-depth case studies concerning classroom management and individualized learner support so that teacher students can practice decision-making and problem-solving skills.

6.2 Recommendations for Future Research

1. Future studies should conduct pilot studies and follow up teacher students' competencies after they enter actual teaching practice in educational institutions in order to examine the sustainability of teacher competencies and their effects on student learning achievement in real classrooms.
2. Future research should investigate the application of artificial intelligence in education (AI in Education) or adaptive learning systems within online learning packages so that systems can analyze and support teacher competencies according to individual needs.
3. The scope of research should be expanded to teacher students in other disciplines or to in-service teachers in order to compare effectiveness and further improve competency-development models.

REFERENCES

- [1] Aekwanang, W. (2017). *Development of a professional teacher competency assessment package for student teachers undertaking professional teaching experience at Rajabhat University* [Doctoral dissertation, Kasetsart University].
- [2] Chaimethee, J. (2018). *Teacher competencies affecting learners' learning skills in schools under the Secondary Educational Service Area Office 21* [Master's thesis, Sakon Nakhon Rajabhat University].
- [3] Chaibong, P. (2002). *Educational technology: Theory and research*. Odeon Store.
- [4] Chaibong, P. (2013). Testing the effectiveness of instructional media or instructional packages. *Silpakorn Educational Research Journal*, 5(1), 1–20.
- [5] Channuwong, S., Bangbon, P., Rodloytuk, P., Phanniphong, K., & Wang, X. (2026). Transformational leadership and strategic management affecting sustainable development of Thai higher education institutions. *Social Sciences & Humanities Open*, 14, 103618. <https://doi.org/10.1016/j.ssaho.2026.103618>
- [6] Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (TDC) framework. *Educational Technology Research and Development*, 68(5), 2449–2472. <https://doi.org/10.1007/s11423-020-09767-4> 166-186. <https://doi.org/10.59543/jidmis.v3.1002>

- [7] Fei, Z., Channuwong, S., Bangbon, P., Siripap, P., & Jia, Y. (2026). Socioeconomic and adaptive determinants of sustainable agricultural development (SDG 2) in Thailand. *Natural and Engineering Sciences*, 11(2), 140-152. <https://doi.org/10.28978/nesciences.262012>
- [8] Guo, X. (2026). Construction and Empirical Validation of The “Faculty-Student-Ai-Environment-Culture” Five-Element Synergistic Model In Higher Education: Evidence From The Integration Of Sdg 4 And Artificial Intelligence. *International Journal of Engineering Sciences & Research Technology*, 15(1), 16–32. Available at: <https://doi.org/10.64149/j.ijesrt.15.1.16-32>
- [9] Intharaprawat, P., Duangphrakaset, N., & Khlongdee, T. (2022). Four teacher competencies that most affect learners’ learning. *Journal of Educational Studies*, 22(1), 180–195.
- [10] Janyakorn, M. (2020). *Development of a digital classroom using Google Sites for the Information Technology for Career Management course (Course Code 30001-2001)* [Research report, Sisaket Industrial and Community Education College].
- [11] Katangchol, S., Channuwong, S., & Snongtaweepon, T. (2023). The model of human resource management for organizational sustainability in the new normal age. *International Journal of Advanced Research*, 11(3), 156-166. <https://doi.org/10.21474/IJAR01/16402>
- [12] Khantharot, A. (2016). *Development of a web page for teaching computer studies on the use of computers for information searching among Grade 6 students* [Master’s thesis, Dhurakij Pundit University].
- [13] Kitrungrueang, P., & Sirisamphan, O. (2018). *Professional learning communities for teachers: Strategies for enhancing educational quality from concepts to practice*. M&N Design Printing.
- [14] McClelland, D. C. (1973). Testing for competence rather than for "intelligence." *American Psychologist*, 28(1), 1–14. <https://doi.org/10.1037/h0034092>
- [15] McKinsey & Company. (2007). McKinsey report on education. <http://www.mckinsey.com>
- [16] Na Lamphun, P. (2017). *Development of a learning package on information technology for Grade 7 students* [Master’s thesis, Mahachulalongkornrajavidyalaya University].
- [17] Office of the Basic Education Commission. (2010). *Teacher competency assessment manual*. Agricultural Cooperative Federation of Thailand Printing House.
- [18] Office of the Education Council. (2008). *Framework for educational development during the Tenth National Economic and Social Development Plan (B.E. 2550–2554 [2007–2011]) in accordance with the National Education Plan (B.E. 2545–2559 [2002–2016]): Summary*. Chulalongkorn University Press.
- [19] Petchsri-ngern, B. (2017). *Developing web-based computer-assisted instruction using Google Sites for the Information and Communication Technology course and a learner satisfaction survey toward the Google Sites-based computer-assisted instruction* [Research report, Nakhon Si Thammarat Rajabhat University].
- [20] Phoemphun, B., In-nok, N., & Serpimai, S. (2021). Teacher competencies affecting learners’ skills in the 21st century in schools under the Nakhon Ratchasima Primary Educational Service Area Office 3. *Buddhamak Journal of Dhamma Studies Research Center, Wat Anut Wikasitaram School*, 6(1), 131–139.
- [21] Photchanachan, S., Thongnun, W., Channuwong, S., Phudarat, S. (2026). Causal relationships among artificial intelligence adoption, environmental technologies, management strategy, and environmental sustainability for sustainable urban environmental management. *Natural and Engineering Sciences*, 11(3), 484-496. <https://doi.org/10.28978/nesciences.263040>
- [22] Phuchamni, W. (2021). *Development of teacher competencies for learning management in the 21st century in the upper northeastern region* [Doctoral dissertation, Sakon Nakhon Rajabhat University].
- [23] Phimphila, P. (2023). Development of an online learning activity package using the 5E inquiry-based learning process for teaching the topic of living organisms and the environment to Grade 10 students at Nakhon Thai School. *Journal of Education, Uttaradit Rajabhat University*, 2(2), 31–42.
- [24] Singhapong, P. (2017). *Online learning through Google Sites to improve learning achievement in the Computer Project course (31231) among Grade 10 students at Saipanya Rangsit School* [Research report, Saipanya Rangsit School].
- [25] Srichim, L., & Samruayruen, B. (2016). Development of web-based computer-assisted instruction using Google Sites based on constructivist theory on the principles of computer projects for Grade 9 students. *Journal of Humanities and Social Sciences, Graduate School, Pibulsongkram Rajabhat University*, 10(1), 129–144.
- [26] Saengchan, W. (2017). *Development of an electronic learning package for mathematics teachers to integrate life skills into mathematics learning for students* [Master’s thesis, Kasetsart University].

- [27] Songsang, S. (2019). *Satisfaction of Grade 5–6 students at Weeranart Suksa School Foundation toward teaching and learning in the Career and Technology Learning Area* [Independent study, Master's degree, Sukhothai Thammathirat Open University].
- [28] Sapokhonov K. S., & Saydaliev S. S. (2026). Competency-Based Medical Education in Pediatric Surgery: The Role of Simulation and Entrusted Clinical Tasks. *International Journal of Education, Society and Policy*, 1(1), 1–4. <https://ijesp.org/index.php/ijesp/article/view/12>
- [29] Research and Development Institute, Chiang Mai Rajabhat University. (2020). *Personnel satisfaction with the implementation of the university's priorities, distinctive features, and areas of specialized expertise*. <http://www.chefile.cmru.ac.th/cmru/2563/cmru/SAR5/KPI5.2/5.2-4-42.pdf>
- [30] Sirathanakul, K., Harnpanich, B., Channuwong, S., Bangbon, P., Niangchaem, L., Sutthadaanantaphokin, K. (2023). The influence of human resource management on educational administration of Thai Private Universities. *Migration Letters*, 20 (S1), 423-436.
- [31] Sonsanam, A., Angboonta, P., Sriphanom, T., Phayakthong, S., & Wongpheng, S. (2025). Development of an online instructional package combined with active learning for the Occupational Education course among second-year undergraduate students. *Journal of Industrial Education*, 24(2), 89–98.
- [32] Spencer, L. M., & Spencer, S. M. (1993). *Competence at work: Models for superior performance*. John Wiley & Sons.
- [33] García-Morales, V. J., Garrido-Moreno, A., & Martín-Rojas, R. (2021). The transformation of higher education after the COVID-19 disruption: Emerging challenges in an online learning environment. *Frontiers in Psychology*, 12, Article 618191. <https://doi.org/10.3389/fpsyg.2021.618191>
- [34] Wongsakorn, M. (2023). *Functional competencies of teachers affecting the effectiveness of teachers' learning management in schools under the Sakon Nakhon Secondary Educational Service Area Office* [Master's thesis, Sakon Nakhon Rajabhat University].