

The Quality Assurance of Online Courses Based on CIPP Model in Guilin Institute of Information Technology (GIIT)

Qiu Chu,
Wichian Intarasompun and Nuttamon Puchatree
Bansomdejchaopraya Rajabhat University, Thailand
Corresponding Author, Email: appamm94@gmail.com

Abstract

With the deep integration of Internet technology and educational informatization, the online course teaching mode, facilitated by the Internet as a transmission channel, has gradually infiltrated into higher education. The quality assurance of online course teaching in higher education is a part of the overall management of teaching quality, serving as both a guarantee and a prerequisite for the orderly development of online teaching. It is imperative to investigate the current status of quality assurance for online course teaching in higher education and to study the paths that ensure the quality of online teaching in universities. This research is urgent and crucial in promoting the construction of high-quality online courses in current times.

The objectives of this research were: 1. To study the Quality Assurance of Online Courses Based on CIPP Model. 2. To study the improvement strategies of teaching quality management of online courses in universities and the optimization suggestions of quality assurance. The study sample consists of 410 students who have taken online courses at Guilin Institute of Information Technology (GIIT), as well as 10 teachers and administrators responsible for online course instruction. To collect data for this study, research tools and procedures were developed, with a reliability of 0.92. Statistical analysis methods, including percentages, means, standard deviations, and content analysis, were employed in the study.

The research findings reveal that: (1) The overall quality assurance of online course instruction at GIIT is at a relatively high level. The highest level is observed in the background assurance measures for online courses ($\bar{X}=4.18$, S.D.=0.93), followed by effectiveness assurance ($\bar{X}=4.14$, S.D.=0.99), implementation assurance ($\bar{X}=4.12$, S.D.=0.99), and slightly lower in input assurance ($\bar{X}=4.08$, S.D.=1.03). (2) The quality assurance of online course instruction in higher education, based on the CIPP model, includes: 1) Background Assurance; 2) Input Assurance; 3) Implementation Assurance; 4) Effectiveness Assurance.

Keywords: Online Courses; Teaching Quality Assurance; CIPP Model

Introduction

In the context of the new era of "Internet+" education, the online teaching model has become an important direction for the reform of higher education teaching in China. Online teaching is also a crucial means of achieving educational equity and balanced distribution of educational resources. Wu Yan, Director of the Higher Education Division of the Ministry of Education, believes that the construction of online courses is a significant measure to achieve educational quality transformation, improve education quality, and promote educational equity. He proposes that the Ministry of Education is implementing the "Digitalization Strategy for Higher Education," aiming to build and promote the "Smart Higher Education" platform to

address issues such as resource dispersion, data flow, and non-standardized management faced by various learners during usage.

To create high-quality online teaching, the development and construction of educational resources have become an urgent need. Director Wu Yan stated, "Online courses are the product of the combination of network technology and higher education, overcoming the limitations of traditional teaching time and space, and changing the traditional teaching model." With the continuous improvement of national policies and the explosive development of AI technology, the development and reform of online teaching have become an unstoppable trend. Both students and teachers urgently seek a perfected high-quality online teaching system, providing new opportunities and challenges for the reform of higher education. (Tosati et al., 2021; Intarasompun et al., 2022)

With the widespread application of information technology in the education sector, and in response to the relevant requirements of the Ministry of Education, GIIT, based on its actual situation, has coordinated cooperation between departments and introduced a series of teaching support policies and measures. This is to address the technical support issues of online teaching, actively organize supervision and evaluation of online teaching, and comprehensively ensure the quality and effectiveness of online teaching. GIIT actively seeks effective methods to improve the quality of online course teaching through diverse approaches, particularly focusing on the evaluation of online teaching outcomes, incorporating the online teaching effect into the teacher's evaluation index system. However, with the technological innovation of information teaching, there are still some pressing issues in the background, input, implementation, and effectiveness of course quality assurance that need to be addressed.

Research Objectives

1. To study the Quality Assurance of Online Courses Based on CIPP Model.
2. To study the improvement strategies of teaching quality management of online courses in universities and the optimization suggestions of quality assurance.

Literature Review

1. The theory of the CIPP model: The CIPP (Context-Input-Process-Product) model, developed by Daniel L. Stufflebeam in the 1960s based on Taylor's course evaluation model, is a decision or improvement-oriented evaluation model. This model emphasizes continuous improvement in teaching practices and the enhancement of teaching effectiveness. Its essence lies in holding performance accountable for improvement, shifting from a mere demonstration of teaching quality to using evaluation results as a theoretical basis for enhancement and progress, ultimately aiming to improve teaching quality. The CIPP evaluation model addresses the deficiencies in evaluation found in Taylor's goal-oriented behavior model, providing direction for the assessment of online course teaching. In comparison to Taylor's model, CIPP is a formative and process-oriented evaluation, possessing more theoretical, formative, and summative aspects. The core purpose of this model is to transform "outcomes" into "improvements," representing a dynamic evaluation that promotes the normalization and long-term nature of teaching assessment.

2. The establishment of a quality assurance system for online course instruction is crucial to ensuring the quality of online courses. According to the research of Chinese scholars Qiu Zhili and Wang Tongxu, the foundation for quality assurance in online course teaching

includes basic conditions for operation, educational system design, the process of teaching implementation, and the evaluation of the educational system. They emphasize the need for a scientifically and reasonably sized operation, professional configuration, integration of high-quality online course teaching resources, provision of excellent services, and the development of an effective evaluation system. The core lies in the management of the teaching implementation process, with a key focus on meeting the basic operational conditions, ensuring effective evaluations of the educational system. The government should provide guidance and support, while universities should collaborate with diverse entities, improve and enhance the distance education system, and establish an effective cyclical system for internal quality management composed of multiple dimensions (Qiu Zhili & Wang Tongxu, 2017). Zhang Jianshe points out that macro factors include policy support, social support, financial support, and technological support, while micro factors include participants in the teaching process, teaching managers, course content, and teaching resources (Zhang Jianshe, 2012).

3. The impact of information technology on the effectiveness of online course instruction is significant. Research in the United States indicates that 80% of campus broadband does not meet the requirements for teaching, prompting the government to initiate the "Connect Education" program to improve educational infrastructure and foster collaboration among various stakeholders to ensure the smooth progress of online teaching. Simultaneously, studies point out the impact of the lack of interaction between teachers and students in online teaching on learning outcomes, as well as the limitations of teacher feedback. Research by South Korean scholar Jung Insung also emphasizes the importance of an assurance system for the quality of online course instruction. It proposes integrating resources, addressing challenges arising from rapid development, and calls for international collaboration and the establishment of authoritative review bodies to effectively enhance the quality of online course instruction (Jung Insung, 2004).

4. Regarding the evaluation of the quality of online course instruction, foreign research has been earlier and emphasizes comprehensiveness and diversity. Madaus and others proposed the CIPP evaluation model to provide feedback for optimizing teaching (Madaus & Kellaghan, 2000). Chinese scholar Peng Qiaoyan believes that evaluation should focus on students, adopting diverse and comprehensive assessment methods, possessing characteristics of the entire process, involving all participants, and incorporating multiple levels. Teacher evaluation should include aspects such as instructional design, online environment, teaching platform, and resources. Teaching management departments should conduct satisfaction surveys or online evaluations, promptly disclose evaluation results, and provide improvement suggestions (Peng Qiaoyan, 2020). Scholars like Xu Shaoming and others propose constructing a comprehensive evaluation system, integrating both the American "QM" standards and national standards for assessment (Xu Shaoming, Lu Xianhong, & Chen Yonghong, 2021). Li Guohe and others argue that the evaluation of online course instruction should make full use of resources, including the use of multiple platforms, analyzing data from online course instruction, extracting the value of relevant teaching information, and utilizing digitized information as theoretical data support for online course instruction evaluation (Li Guohe, Zhao Jianhui, & Wu Weijiang, 2018). Darvishi et al. suggest utilizing AI and learning analytics to provide students with more detailed and helpful feedback comments, enhancing the reliability of student assessments (Darvishi, Khosravi & Gašević, 2022). Liang Qing analyzes the assessment system experiences in the United States, Japan, the Netherlands, and other countries, suggesting that the construction of third-party evaluation systems in Chinese higher

education should adopt strategies such as accelerating legal construction, encouraging the development of third-party evaluation agencies, referencing third-party evaluation systems, and creating a conducive environment for demand (Liang Qing, 2020).

Research Methodology

This study employs a mixed-methods approach, combining qualitative and quantitative research methods. Data collection tools include questionnaire surveys and semi-structured interviews. The collected data are primarily utilized for descriptive statistics and content analysis.

Population and sample

1. The Population

The survey targeted a total of 15,334 current students who have taken online courses at GIIT and 110 teachers and administrators responsible for online course instruction.

2. The Sample Group

2.1 For Questionnaire: In the study, the initial sample size was calculated to be 390 students using the Yamane sampling formula (Yamane, 1967). Due to the potential presence of invalid questionnaires, an additional 5% of the sample was added. Consequently, the final sample consisted of 410 students who participated in online courses at GIIT, selected through Stratified Random Sampling based on grade proportions and then using Simple Random Sampling.

2.2 For Interview: The interviewees, comprising a total of 10 individuals responsible for online course instruction at GIIT, were selected through a combination of stratified work sampling and specific random sampling.

Instruments

The researchers developed a survey questionnaire and an interview guide based on the ideas, theories, and findings gathered from research and investigations. The questionnaire consists of two parts: the first part is a general information survey about the respondents, including grade, age, and major. The second part focuses on the quality assurance of online course instruction at GIIT, covering 4 questions on the background assurance, 5 questions on investment assurance, 8 questions on implementation assurance, and 4 questions on effectiveness assurance, totaling 21 questions. The interview guide includes two questions for each of the four aspects mentioned above for data collection in this study.

Data Collection

In this study, the researchers conducted data collection through the following procedures:

1. Questionnaire Data Collection:

Researchers obtained authorization from GIIT management to collect data from students who have participated in online course instruction at GIIT. They used the "Wenjuanxing" platform to distribute survey questionnaires to GIIT students. The researchers reviewed the collected questionnaires, examined their completeness, and prepared them for further statistical analysis.

2. Interview Guide Data Collection:

Researchers conducted telephone interviews via online video conferencing with 10 teachers and administrators responsible for online course instruction at GIIT. They compiled and summarized the interview content, outlining strategies to enhance the quality of online course instruction in higher education.

Data analysis

In this study, researchers analyzed the collected data using the following methods:

1. Descriptive Statistics:

1.1 Percentage Analysis: Analyzing the percentage of demographic information data in the sample population.

1.2 Mean Calculation: Utilizing the mean to interpret the average values and understand the significance of various data. The standard for judging the mean is based on a 5-level estimation scale:

- Average score 4.51-5.00 indicates the highest level
- Average score 3.51-4.50 indicates a relatively high level
- Average score 2.51-3.50 indicates a moderate level
- Average score 1.51-2.50 indicates a relatively low level
- Average score 1.00-1.50 indicates the lowest level

1.3 Standard Deviation: Measuring the distribution of data.

2. Content Analysis:

Researchers conducted statistical summaries of the interview guide, utilizing frequency and percentage, along with more in-depth qualitative analysis to identify patterns and trends that meet the current quality assurance requirements for online course instruction in higher education. They compared different interviewees to identify commonalities or differences in specific viewpoints or themes. The data obtained were summarized to derive strategies for enhancing the quality assurance of online course instruction.

Research Conceptual Framework

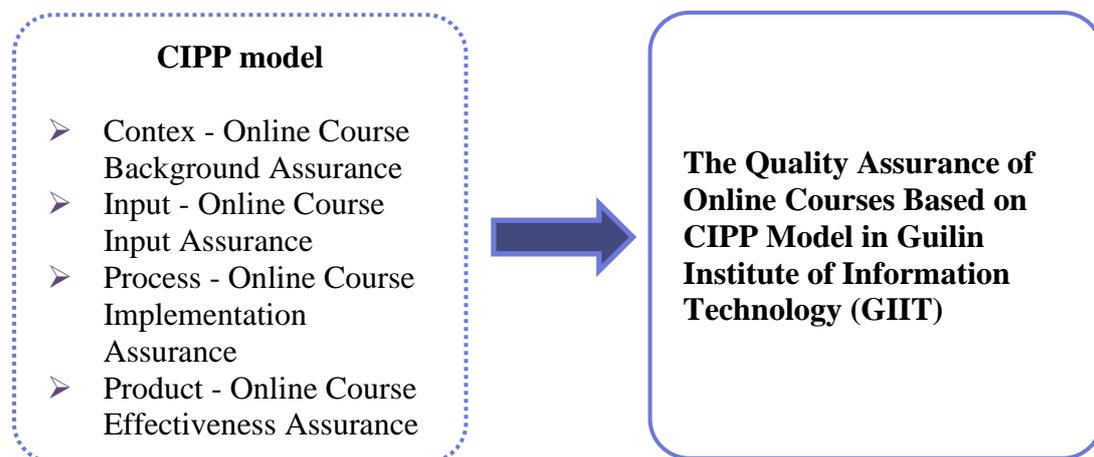


Figure 1 Research Conceptual Framework

This study is based on the theoretical framework of the CIPP model to conduct relevant activities and propose optimization strategies for quality assurance in online courses in higher education. The researcher, building upon the four dimensions of the CIPP model (Context, Input, Process, Product), introduces four variables in this study: Background Assurance, Input Assurance, Implementation Assurance, and Effectiveness Assurance. The study will involve both quantitative and qualitative analyses. Through the integration of these

analyses and the identification of two primary objectives, the researcher aims to propose a framework for quality assurance in online courses, as illustrated in Figure 1.

Research Results

Part 1: Descriptive Data Analysis of the Current State of GIIT Online Course Teaching Quality Assurance using Mean and Standard Deviation.

The overall data of GIIT respondents were analyzed quantitatively in terms of online course background assurance, online course investment assurance, online course implementation assurance, and online course outcome assurance using mean and standard deviation, as shown in Tables 1-5.

Table 1 GIIT Online Course Overall Teaching Quality Assurance Survey Results Summary

The relevant factors for ensuring the quality of online course instruction		\bar{X}	S.D.	Opinion level
1.	Online Course Background Assurance (Contex)	4.18	0.93	High level
2.	Online Course Input Assurance (Input)	4.08	1.03	High level
3.	Online Course Implementation Assurance (Process)	4.12	0.99	High level
4.	Online Course Effectiveness Assurance (Product)	4.14	0.99	High level

As shown in Table 1, data analysis of the factors influencing the quality assurance of GIIT online course teaching was conducted using means and standard deviations. The research results revealed that among the four influencing factors, namely, online course background assurance, online course investment assurance, online course implementation assurance, and online course effectiveness assurance, the highest average value was observed for online course background assurance ($\bar{X}=4.18$), followed by online course effectiveness assurance ($\bar{X}=4.14$), online course implementation assurance ($\bar{X}=4.12$), and the lowest average value was for online course investment assurance ($\bar{X}=4.08$). Looking at the standard deviations of these four variables, online course background assurance (S.D.=0.93) had the smallest degree of data dispersion, followed by online course implementation assurance (S.D.=0.99) and online course effectiveness assurance (S.D.=0.99), while online course investment assurance (S.D.=1.03) exhibited a relatively larger degree of data dispersion.

Table 2 GIIT Online Course Background Assurance Survey Result Summary Table

The relevant factors for online course Background Assurance(Contex)	\bar{X}	S.D.	Opinion level
1. The university actively responds to various online course quality assurance policies introduced by the government.	4.22	0.89	High level
2. The university's academic culture and institutional ethos exhibit a high degree of influence and orientation towards the development of online course instructional quality.	4.17	0.94	High level
3. You have a clear understanding of the university's online course philosophy and objectives.	4.13	0.97	High level
4. The implementation process of online courses at the university aligns with the goals and principles of the curriculum.	4.21	0.91	High level
Total	4.18	0.93	High level

As shown in Table 2, the current status of background assurance for GIIT's online courses is generally at a high level (\bar{X} =4.18, S.D.=0.93). Examining the results of individual items, students' evaluation of the institution's responsiveness to government policies is the highest (\bar{X} =4.22, S.D.=0.89), followed by the alignment between course implementation and philosophical goals (\bar{X} =4.21, S.D.=0.91), and the perceived influence and directionality of course quality development (\bar{X} =4.17, S.D.=0.94). The lowest average score is for students' clarity regarding the philosophy and goals of the courses (\bar{X} =4.13, S.D.=0.97), with the highest standard deviation for this item, indicating significant variability in students' evaluations of this aspect.

Table 3 GIIT Online Course Input Assurance Survey Result Summary Table

The relevant factors for online course Input Assurance(Input)	\bar{X}	S.D.	Opinion level
1. The overall quality of the faculty at our university is quite high.	4.14	0.96	High level
2. The university has a well-structured and reasonably planned faculty for online courses.	4.17	0.95	High level
3. You have used the latest instructional materials authored by the university's faculty.	3.89	1.22	High level
4. Our university provides ample financial support for the teaching and operation of online courses.	4.10	1.00	High level

5. Our university boasts well-established online course teaching facilities and supporting infrastructure.	4.06	1.04	High level
Total	4.08	1.03	High level

As shown in Table 3, the current status of input assurance for GIIT's online courses is generally at a high level (\bar{X} =4.08, S.D.=1.03). Upon analyzing various aspects, it is observed that the highest average is for the rationality of faculty planning and allocation (\bar{X} =4.17, S.D.=0.95), followed by the overall level of faculty competence (\bar{X} =4.14, S.D.=0.96), sufficient financial support for courses (\bar{X} =4.10, S.D.=1.00), and well-equipped teaching facilities (\bar{X} =4.06, S.D.=1.04). The lowest average is for the use of the latest materials written by in-house teachers (\bar{X} =3.89, S.D.=1.22). Three items have standard deviations greater than 1, namely, in-house teachers' self-authored materials, online course funding, and online course facilities and supporting infrastructure, indicating significant variability in students' evaluations of these three aspects.

Table 4 GIIT Online Course Implementation Assurance Survey Result Summary Table

The relevant factors for online course Implementation Assurance(Process)	\bar{X}	S.D.	Opinion level
1. The university's online course design is comprehensive.	4.08	1.02	High level
2. The university's online course design is innovative and advanced.	4.10	0.99	High level
3. You believe that the university's online course content is beneficial for mastering fundamental knowledge domains and thinking methods.	4.12	0.98	High level
4. You believe that the university's online course content integrates and spans different subject areas.	4.11	0.99	High level
5. You believe that the university's online course classroom teaching emphasizes problem orientation and stimulates your learning interest.	4.10	1.00	High level
6. You believe that the university's online course teaching methods are flexible and dynamic, focusing on interaction between instructors and students.	4.14	0.97	High level
7. The university's online course assessment system is reasonably and flexibly structured.	4.14	1.00	High level
8. The university's online course teaching and management mechanisms effectively promote online education and ensure teaching quality.	4.14	0.98	High level
Total	4.12	0.99	High level

As shown in Table 4, the overall status of implementation assurance for GIIT's online courses is generally at a high level ($\bar{X}=4.12$, S.D.=0.99). Analyzing various aspects, the highest averages are for the flexibility of teaching methods ($\bar{X}=4.14$, S.D.=0.97), multidimensional assessment systems for courses ($\bar{X}=4.14$, S.D.=1.00), and teaching management mechanisms ensuring teaching quality ($\bar{X}=4.14$, S.D.=0.98). Following these, there are higher averages for course content conducive to mastering knowledge domains and thinking methods ($\bar{X}=4.12$, S.D.=0.98), the integrative nature of course content with other disciplinary areas ($\bar{X}=4.11$, S.D.=0.99), the pioneering and advanced nature of courses ($\bar{X}=4.10$, S.D.=0.99), and the guidance of classroom teaching ($\bar{X}=4.10$, S.D.=1.00). The lowest average is for the comprehensiveness of course design ($\bar{X}=4.08$, S.D.=1.02). Three items have standard deviations greater than 1, namely, the comprehensiveness of online course design, the problem-oriented nature of teaching content, and the multidimensional setting of the teaching assessment system, indicating significant differences in students' opinions on these implementation assurances.

Table 5 GIIT Online Course Effectiveness Assurance Survey Result Summary Table

The relevant factors for online course Effectiveness Assurance(Product)	\bar{X}	S.D.	Opinion level
1. Your online course learning has improved your various professional competencies.	4.16	0.97	High level
2. You are highly satisfied with the online courses offered by the university.	4.12	0.99	High level
3. The knowledge you have gained from the university's online course teaching aligns well with the needs of prospective employers.	4.10	1.03	High level
4. The university has been continuously improving and innovating its online courses.	4.16	0.98	High level
Total	4.14	0.99	High level

As shown in Table 5, the overall status of effectiveness assurance for GIIT's online courses is generally at a high level ($\bar{X}=4.14$, S.D.=0.99). Analyzing various aspects, the highest averages are for the improvement of students' professional qualities ($\bar{X}=4.16$, S.D.=0.97) and the continuous improvement and innovation of online courses ($\bar{X}=4.16$, S.D.=0.98). Following these, there is a higher average for the satisfaction level of online courses ($\bar{X}=4.12$, S.D.=0.99). The lowest average is for the alignment of acquired knowledge with societal demands ($\bar{X}=4.10$, S.D.=1.03), and this item also has the highest standard deviation.

Part 2: Qualitative Statistical Data Analysis Results on GIIT Online Course Teaching Quality Assurance.

In addition to the aforementioned quantitative data analysis, the researcher conducted semi-structured interviews to explore the perspectives of GIIT's online course instructors and course managers on the quality assurance of online course teaching. The summarized results of the interviews are as follows:

1. Interviewees mentioned specific measures in terms of background assurance for online courses, including comprehensive training, regular assessments, technical support and resource provision, establishing teaching teams, and introducing new technologies. These measures aim to ensure that teachers fully understand and apply government policies, thereby enhancing the overall teaching quality.

2. Specific measures mentioned by interviewees regarding input assurance for online courses include teachers' inclination to use external materials, while the school lacks policies encouraging the development of in-house teaching materials. Insufficient funds are a major constraint, limiting the investment and development of online courses.

3. Specific measures mentioned by interviewees regarding implementation assurance for online courses include emphasizing comprehensive design, interdisciplinary collaboration, integrating theory and practice, and employing diverse teaching strategies. The school faces resource challenges but is actively addressing limitations in interdisciplinary collaboration, strengthening the integration of theory and practice, and diversifying teaching strategies. Additionally, the school adopts a problem-oriented teaching approach to stimulate students' interest in active thinking and problem-solving, enhancing their ability to apply knowledge comprehensively.

4. Specific measures mentioned by interviewees regarding effectiveness assurance for online courses include maintaining close ties with enterprises, regularly evaluating online courses and collecting student feedback to improve courses and ensure their alignment with student needs. The school has also established a teaching innovation reward mechanism to encourage teachers to develop innovative online courses.

Discussion

Background Assurance

The research findings indicate that the school's response to government policies, teacher training and assessment, as well as technical support and resource provision, are crucial factors influencing teaching quality. This underscores the pivotal role of background assurance in online course instruction. The school needs to formulate corresponding training plans, regularly assess teachers' mastery of policies, and encourage their participation in training to enhance overall teaching standards. This aligns with the views of Guo Shaoqing (2023), who emphasizes the need to enhance the sustained service capabilities of the teaching and research team. In the backdrop of educational reform, teachers require continuous, long-term, and iterative guidance and support for the successful implementation of new educational concepts and teaching methods gained through training.

Input Assurance

Research results reveal that insufficient funds are a major constraint on online course investment. School administrators need to develop scientifically sound budget plans to ensure the sustainable development of online courses. Simultaneously, attention should be given to facility upgrades, providing a conducive teaching environment to meet the demands of online

instruction. Additionally, clear policy guidance is necessary to encourage teachers to participate in the development of in-house teaching materials, accompanied by the requisite financial and resource support. We are aware that no system is flawless. However, efforts should be directed towards eliminating all obstacles hindering the learning process, emphasizing the importance of personnel, resources, procedures, and the clarity of decision-making for new objectives (Stufflebeam, 1969).

Implementation Assurance

Implementation assurance emphasizes the comprehensiveness of online course design, interdisciplinary collaboration, and diversity in teaching strategies. The key to implementation assurance lies in adopting problem-oriented teaching methods and strategies that stimulate student interest. School administrators can organize interdisciplinary teams for course design, incorporating new technologies and teaching strategies to elevate the quality of online course design and enhance the learning experience using technological tools. Designing more attractive teaching activities based on online platform features and personalized learning needs is crucial. This aligns with the views of Jiang Yujun, Bai Xuemei, Wu Wenchen, and Luo Xiaojuan (2019), emphasizing that teacher course design is a core influencing factor in the online learning experience, significantly impacting student satisfaction. When designing online courses, a student-centered approach should be adopted, considering students' learning experiences, individual characteristics, and expectations to create specific and feasible activities and models.

Effectiveness Assurance

Effectiveness assurance involves the school's connection with enterprises, industry cooperation, and standard setting. Collaboration with enterprises in course standard formulation, involvement of industry experts in course assessment, and the collection of diverse teaching evaluations such as student feedback and artificial intelligence can help identify issues promptly and implement improvement measures. This ensures the quality and adaptability of online courses. This is in line with the research perspective of Darvishi, Khosravi, Sadiq, & Gašević. (2022), suggesting the use of AI and learning analytics to provide more detailed and helpful feedback comments to students, infer the reliability of student ratings, and increase the credibility and adoption of peer review systems. This enables teachers to better utilize the system's suggestions for their growth.

Conclusion

1. The average score for background assurance, influencing the teaching quality of online courses in universities, is the highest ($\bar{X}=4.18$, S.D.=0.93), indicating its prominence among the four influencing factors. The school has undertaken a series of proactive measures in response to government policies aimed at ensuring the quality of online course teaching. Firstly, through methods such as comprehensive training, regular assessments, and online course training, the school ensures that teachers possess the necessary skills for online teaching. Secondly, the establishment of support teams, instructional design teams, and other entities assists teachers in successfully conveying course concepts and achieving teaching objectives in the online environment. Additionally, measures like regular discussions, sharing of teaching experiences, and creating a teaching resource repository promote collaboration and communication among teachers, further enhancing the quality of online courses.

2. The average score for investment assurance is the lowest ($\bar{X}=4.08$, S.D.=1.03), indicating its relative weakness compared to other factors. While there is a high quality of introduced teaching staff, and the school pays great attention to faculty, investments in online course funds and teaching facilities appear somewhat insufficient. The use of funds for online courses and the situation of in-house teaching materials by full-time teachers need improvement. Future enhancements in online courses should focus on increasing the intensity and efficiency of fund allocation, directing limited online course funds toward improving online teaching facilities and supporting infrastructure. Encouraging full-time teachers to develop materials aligned with online course objectives, student specifics, and practical needs will enhance the teaching quality of online courses.

3. The average score for implementation assurance is moderate, with a small standard deviation ($\bar{X}=4.12$, S.D.=0.99), indicating good stability and consistency in the implementation process. The school shows comprehensive attention to implementation assurance for online courses, including interdisciplinary collaboration, the integration of theory and practice, and diverse teaching strategies. Teachers also focus on problem-oriented teaching during actual teaching, stimulating student interest and active thinking through methods like introducing real cases, interactive discussions, and personalized learning tasks. However, some interviewees mentioned challenges and areas for improvement, such as limitations in interdisciplinary collaboration, opportunities for improvement in the integration of theory and practice, and the need for further strengthening of teaching strategy diversity.

4. The average score for effectiveness assurance is relatively high, with a moderate standard deviation ($\bar{X}=4.14$, S.D.=0.99), indicating a recognized level of implementation effectiveness with room for improvement. The school demonstrates certain advantages in ensuring the effectiveness of online courses, including regular course assessments, student feedback collection, and collaboration with industry enterprises. However, some interviewees mentioned areas for improvement, such as closer alignment with employer needs and enhanced practical opportunities. The school has taken proactive measures in ensuring the effectiveness of online courses, but there are aspects that require further strengthening and improvement to ensure online courses better meet the demands of employers and enhance students' competitiveness in the job market.

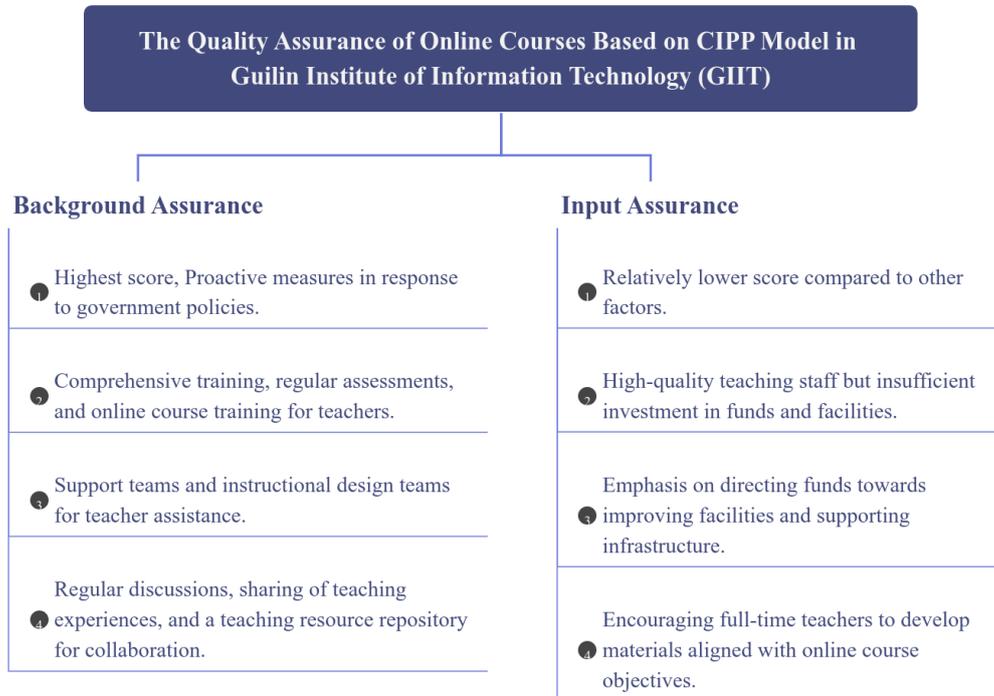


Figure 2 Summary of Strategies for Ensuring the Quality of Online Course Instruction at GIIT

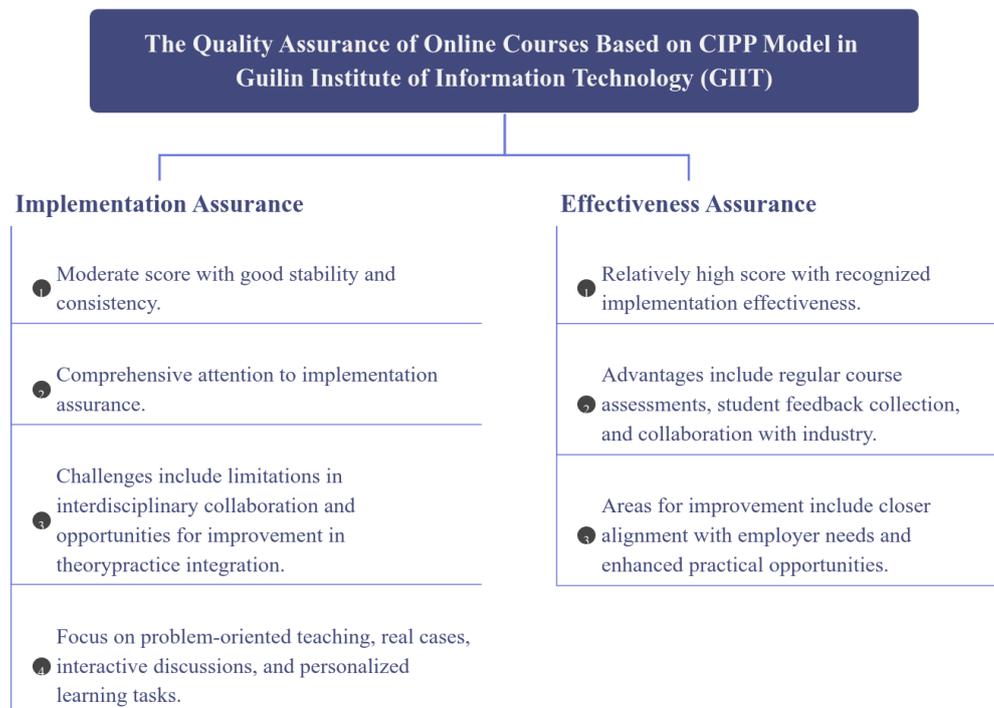


Figure 2 Summary of Strategies for Ensuring the Quality of Online Course Instruction at GIIT (Continued)

Recommendation

1. Applying the research results to practical recommendations:

1.1 Based on the research findings on the online course quality assurance using the CIPP model, it is evident that the investment guarantee for GIIT's online courses is relatively weak. The school can explore additional funding sources and develop long-term plans to improve the teaching facilities and support for online courses, thereby enhancing the overall investment level. Additionally, collaboration with external institutions can be considered to collectively elevate the quality and standards of online education, ensuring the sustainable development of online courses.

1.2 The school can actively establish collaboration mechanisms with other universities, sharing materials and teaching resources for online courses. Through collaboration, the costs of material development and facility improvements can be reduced, leading to increased overall efficiency. It is essential to identify outstanding online course resources, ensuring the high quality and practicality of course content, materials, and teaching resources.

2. Recommendations for future research are as follows:

2.1 In-depth exploration of the online course domain: Further delve into the research on the quality of online course instruction, expanding the application scope of the CIPP model, and examining more factors influencing the quality of online courses.

2.2 Comparative study of online course practices in different universities: Conduct cross-institutional comparative research to understand the practical experiences and achievements of online courses in various universities. This can help identify successful practices and lessons learned, providing guidance and directions for improvement to other institutions.

2.3 Learner-centric research: Investigate students' participation and satisfaction with online courses, exploring factors influencing the learning experience. This includes aspects such as instructional design, course content, interactivity, etc., to further enhance the attractiveness and effectiveness of online education.

2.4 Explore new teaching quality management strategies: Research emerging strategies and methods for teaching quality management to adapt to the evolving online learning environment, incorporating the application of new technologies such as artificial intelligence and big data in instructional management.

These recommendations aim to drive future research towards comprehensive, in-depth, and diverse developments in the field of online course quality assurance.

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