Innovative Research on Teaching Design and Development of Courses Based on Digital Platforms

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Abstract: The purpose of this paper is to discuss the innovative research on the instructional design and development of courses based on digital platforms. Firstly, the importance of digital platforms in the field of education and the current status of their application are introduced. Secondly, the concepts and key elements of course instructional design and development are analysed, and the role of digital platforms in course instructional design and development is discussed. Then, the innovative practices and methods of course instructional design and development based on digital platforms are described, including the integration and personalised customisation of learning resources, the construction and interactive communication of learning communities, and the improvement of evaluation and feedback.

Keywords: Digital Platforms; Course Instructional Design; Development of Innovations

Introduction

The popularity and development of digital platforms have revolutionised education and teaching. Digital platforms not only provide rich learning resources and tools, but also provide teachers and students with more flexible and personalised teaching and learning modes. Therefore, it is of great practical significance to study the innovation of teaching design and development of courses based on digital platforms. The aim of this study is to explore the innovative methods of course instructional design and development based on digital platforms, and to analyse their impact and significance on education and teaching. Through literature review and empirical research, as well as the method of case study, the application of digital platforms in course instructional design and development is studied and explored.

1. Concepts and elements of curriculum instructional design and development

1.1 Definition of curriculum design

Curriculum design refers to the process of designing a set of organised, structured and targeted education and teaching programmes in education and teaching activities by integrating teaching resources and teaching methods according to teaching objectives and students' needs. It is a systematic and comprehensive task, including the setting of curriculum objectives, the selection and organisation of teaching content, the design and application of teaching methods, and the preparation and selection of teaching materials.

1.2 Elements and steps in curriculum design

1.2.1 Elements of curriculum design

First, teaching objectives: clear teaching objectives are the first task of curriculum design. Teaching objectives should be specific and clear, including knowledge objectives, skill objectives and emotional objectives. The setting of teaching objectives should be based on the subject education

Secondly, teaching content: according to the teaching objectives, select and organise appropriate teaching content. Teaching content should include the necessary basic knowledge and skills, as well as expanded and extended content, so that students can

gradually master and apply what they have learnt.

Third, Teaching Methods: according to the teaching objectives and the characteristics of the students, to choose the appropriate teaching methods. Teaching methods should not only focus on teacher-student interaction, stimulate students' initiative, but also focus on cultivating students' spirit of cooperation and innovation.

Fourth. Teaching evaluation: Establish a reasonable teaching evaluation system to assess students' learning. Teaching evaluation should focus on the evaluation of students' comprehensive quality, including both the assessment of knowledge and skills and the cultivation of students' emotional attitudes and values.

1.2.2 Steps in course design

First, analysing needs: this includes analyses of the educational objectives of the subject, the characteristics of the students and the needs of the society, which provide a basis for the setting of teaching objectives.

Secondly, setting teaching objectives: clarifying teaching objectives, including those of knowledge, skills and emotions.

Thirdly, selection of teaching materials and teaching resources: selecting appropriate teaching materials and teaching resources to support the achievement of teaching and learning objectives.

Fourth, designing teaching activities: according to the teaching objectives and teaching materials, designing teaching activities, including the choice of teaching methods and classroom organisation.

Fifth, implementation and evaluation: according to the teaching design, organise and implement teaching activities, and carry out evaluation to understand students' learning and teaching effectiveness.

2. The role of digital platforms in the pedagogical design and development of courses

2.1 Provision of rich learning resources

Digital platforms provide rich and diverse learning resources for curriculum teaching design and development. Teachers can access a variety of online teaching materials, learning videos, e-books and other resources through the digital platform, which not only enrich the teaching content, but also make learning more vivid and interesting. In addition, the digital platform can also provide students with personalised learning resources to meet the learning needs and interests of different students.

2.2 Provide flexible teaching and learning modes

Digital platforms provide flexible and diverse teaching and learning modes for the design and development of course teaching. Teachers can offer online courses and implement distance learning through online teaching platforms, presenting teaching content and learning resources in a variety of forms, increasing students' learning modes and learning opportunities. At the same time, students can also carry out independent learning, interactive exchanges and group cooperation through the digital platform, which improves the flexibility and interactivity of teaching.

2.3 Supporting personalised learning and differentiated instruction

The application of digital platforms can support personalised learning and differentiated teaching. Teachers can implement personalised teaching by tailoring learning plans and resources for students according to their different learning levels, interests and learning styles. Through the learning management system of the digital platform, teachers can also monitor and assess students' learning situation and progress in real time, and make timely adjustments to teaching strategies to better meet students' learning needs.

2.4 Provide real-time evaluation and feedback

The digital platform can also provide a real-time evaluation and feedback mechanism in course teaching design and development. Teachers can assess students' learning in real time through online quizzes and homework submissions, identify students' learning problems and difficulties in a timely manner, and provide targeted guidance and support. In addition, students can also get instant feedback and evaluation from teachers through the digital platform, which promotes students' learning reflection and progress.

3. Innovative Practices and Methods of Teaching Design and Development of Courses Based on Digital Platforms

3.1 Integration and personalisation of learning resources

3.1.1 Development and application of intelligent learning resources

Using digital platforms, intelligent learning resources can be developed and applied to provide students with more flexible and personalised learning experiences. Intelligent learning resources can tailor-make learning content and learning paths for students according to their learning background, learning interests and learning progress. In this way, students can choose learning resources that suit them according to their own characteristics and needs, and improve their learning effectiveness. For example, some online learning platforms can recommend learning materials, courses and practice topics suitable for students according to their learning situation. Meanwhile, intelligent learning resources can also provide personalised learning counselling and feedback through data analysis and artificial intelligence technology. Students can adjust their learning strategies and improve their learning results based on their learning situation and feedback results.

3.1.2 Personalisation and adaptive evaluation of learning resources

Digital platforms offer more possibilities for personalised customisation of learning resources and adaptive assessment. Teachers can select and customise learning resources suitable for students according to their learning characteristics and needs. For example, taking the online learning platform as an example, after registering and logging into the system, students can select courses suitable for them according to their interests and learning objectives. The system will recommend suitable learning resources and activities for students based on their course selection records and learning performance. Students can choose their own learning resources and make use of the functions provided by the platform to study. During the learning process, the system will give real-time learning feedback and suggestions based on students' learning data. Meanwhile, students can also use the system's search function to select learning resources and learning communities that suit their learning needs. Through personalisation and adaptive assessment, students can learn more effectively and improve their learning outcomes.

3.2 Learning community building and interactive communication

3.2.1 Construction and operation of blended learning communities

A blended learning community is a combination of online and offline learning communities that use digital platforms to provide learners with diverse learning and collaboration environments.

First, online discussion and cooperation: through the online discussion function of the digital platform, a communication platform between learners is built. Learners can raise questions, share their views and engage in discussions and cooperation with other learners in the course, in order to promote mutual understanding and knowledge-sharing among learners.

Second, group cooperation and project practice: using the collaboration tools of digital platforms, learners are divided into groups and given the opportunity to work together to complete project tasks. Through online collaboration, learners can work together to solve problems and complete tasks, thereby enhancing their ability to cooperate and innovate.

3.2.2 Collaboration and interaction in online learning communities

An online learning community is a learning community that is built and operated online, based on a digital platform. Collaboration and interaction in online learning communities can take the following approaches:

First, online discussion and feedback: using the discussion boards or social functions of digital platforms, learners can engage in instant discussion and interaction. Teachers can raise questions, guide learners to participate in discussions, and give timely feedback and guidance to promote in-depth thinking and communication among students.

Second, virtual experimentation and simulation: through the virtual laboratory or simulation software provided by the digital platform, learners can conduct experiments and simulation operations, observe and analyse the results of experiments, and communicate and share them with other learners. This virtual experimentation and simulation can provide a safer and more economical experimental environment, and at the same time facilitate interaction and sharing among learners.

Third, online counselling and mutual assistance: learners can ask teachers questions and seek help and solve problems through the

online counselling function of the digital platform. At the same time, learners can also help each other, share their learning experience and problem-solving methods, and promote mutual assistance and interaction among learners.

3.3 Improvements in evaluation and feedback

3.3.1 Evaluation methods and tools based on digital platforms

Some commonly used evaluation methods and tools based on digital platforms include:

First, automated assessment: automated assessment tools on digital platforms allow for a quick and accurate assessment of students' knowledge acquisition. These tools can automatically generate scores and feedback based on students' answers to questions, helping students to keep abreast of their learning achievements and shortcomings.

Second, online questionnaires: the digital platform allows for easy access to online questionnaires to collect students' feedback and opinions on course teaching. By analysing the results of the questionnaires, teachers can learn about students' satisfaction, understanding and learning needs of teaching activities, so that they can make improvements and adjustments accordingly.

Thirdly, multimedia evaluation: the digital platform provides the function of displaying and evaluating multimedia materials, so that teachers can evaluate students' expression, creativity and co-operation through their works, displays, demonstrations and other multimedia forms. This kind of evaluation is more intuitive and concrete, and can stimulate students' learning interest and motivation.

3.3.2 Individualised feedback and demonstration of learning outcomes

The digital platform provides a convenient way for personalised feedback and demonstration of learning outcomes. Through the digital platform, teachers can quickly access students' learning data and achievements, provide personalised feedback and guidance based on students' individual differences, and help students identify their strengths and weaknesses, and formulate corresponding learning strategies and plans.

In addition, the digital platform can also provide a platform to showcase students' learning outcomes. Students can demonstrate their learning outcomes and thinking by uploading their works, posting blogs and participating in online discussions. This can not only enhance students' self-confidence, but also stimulate their learning motivation and creativity.

4. Summary

The instructional design and development of courses based on digital platforms is an endeavour with great potential and room for innovation. Through the rational use of digital technologies and platforms, the teaching effect and learning experience can be enhanced, and the personalised learning and independent development of students can be promoted. However, it is also necessary to pay attention to issues such as the selection and use of platforms, safeguarding students' privacy and information security, as well as promoting interaction and co-operation between teachers and students in the course of practice. Therefore, future research and practice need to continue to explore and improve in depth to better meet the needs of students and teachers and to promote innovation and development in education.

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