

# Training Inquiry-Based Learning Ability of Animation Students under Information Technology Conditions

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**Abstract:** This study provides a profound insight into the impact of information technology on the inquiry-based learning abilities of animation students. With the continuous advancement of information technology, the evolution of educational methods becomes crucial in nurturing students' inquiry-based learning (IBL) skills, particularly in creative fields such as animation. It underscores information technology's significant role and multifaceted influence on inquiry-based learning. The development of information technology has a positive impact on sparking students' interest in learning, enhancing their learning capabilities, and cultivating innovative thinking among animation majors. Through this study, we better understand how to cultivate inquiry-based learning abilities among animation students in the era of information technology and provide educators with some recommendations to better meet the skills and competencies required for students' future careers. This research holds significant importance in driving innovation and creative thinking in animation.

**Keywords:** Information Technology; Inquiry-Based Learning; Ability; Animation Learning.

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## 1. Introduction

The modern education sector increasingly focuses on fostering students' creativity, critical thinking, and problem-solving abilities. Educators are increasingly incorporating Inquiry-based Learning (IBL) as an effective teaching method to adapt to this evolving educational environment. IBL emphasizes active student participation and independent learning, enabling knowledge acquisition through questioning, exploration, and practical application. With rapid technological advancements, integrating inquiry-based learning with information technology presents new educational opportunities and challenges.[1]

In the field of animation learning, inquiry-based learning holds particular significance. Animation is a creative art form that necessitates continuous creation and experimentation. Traditional lecture-style teaching methods often stifle students' creativity and limit their active involvement, hindering their comprehensive understanding of animation principles and techniques. Conversely, within the inquiry-based learning framework, students learn by actively exploring and discovering knowledge, thereby nurturing critical thinking and problem-solving skills. Existing research demonstrates that adopting inquiry-based learning methods significantly positively impacts students' learning outcomes and animation creation abilities. For instance, a study comparing traditional teaching methods with inquiry-based learning found that students excelled in applying and creating animation techniques while showcasing higher critical thinking and problem-solving abilities [2-3]. Another study explored integrating information technology into inquiry-based learning. It revealed that technology tools provide students with a broader array of resources and opportunities for practice, enhancing their active engagement and deep understanding [4]. Despite these encouraging findings, there remain several challenges to overcome. Firstly, teachers must effectively integrate information technology and inquiry-based learning to enrich learning experiences and support

students' exploration processes. Secondly, teachers need to possess adequate technical capabilities and teaching strategies to guide students in inquiry-based learning within an information technology environment [5]. Additionally, educational institutions should furnish sufficient information technology facilities and resources to meet the practical needs of both teachers and students.

Therefore, this research aims to explore how inquiry-based learning skills can be cultivated and improved for animation students in the context of information technology. Effective cultivation strategies will be proposed through a comprehensive review of domestic and international literature. By combining information technology with inquiry-based learning, this study seeks to offer guidance to teachers and students in animation learning, fostering their development in creativity and problem-solving while advancing innovation and progress in animation learning.

## 2. Importance of IBL in Animation Learning

### 2.1. Fostering Creativity and Innovation

IBL plays a vital role in fostering creativity and innovation in animation learning. By encouraging students to explore, question, and experiment, this approach stimulates their imagination and helps them think outside the box. In traditional instructional models, students may be given predefined assignments or tasks that limit their creative expression. However, inquiry-based learning allows students to immerse themselves in animation, generating unique ideas and pushing the boundaries of their artistic capabilities. When students engage in open-ended inquiries, they are empowered to discover new techniques, experiment with different styles, and explore unconventional approaches to animation. By challenging the status quo, inquiry-based learning nurtures a culture of innovation in which students are encouraged to take risks, learn from failures, and continuously improve their skills. This emphasis on creativity prepares students to

become visionary animators who can introduce fresh perspectives and original concepts to the industry.

## 2.2. Developing Critical Thinking Skills

In animation learning, critical thinking goes beyond creating visually appealing characters and scenes; it involves a profound understanding of storytelling, problem-solving, and the ability to engage the audience emotionally. Information technology is crucial in this process, offering students advanced tools and resources to sharpen their critical thinking skills [6].

**Problem-Solving with Technology:** Animation projects often encounter technical glitches or require complex solutions. Information technology provides students access to advanced software, rendering tools, and animation platforms [7]. These technological resources empower students to tackle challenges efficiently and find innovative solutions.

**Character Development through Research:** Crafting compelling and relatable characters requires a deep understanding of human psychology and emotions. Information technology allows students to access various research materials, from psychology studies to character design databases. This information empowers them to create characters that resonate with the audience more deeply.

**Storytelling and Digital Tools:** Animation is fundamentally a storytelling medium. Critical thinking helps students analyze narratives, but information technology provides digital tools to visualize and experiment with various storytelling techniques. They can use animation software to create storyboards, test different narrative structures, and refine their storytelling skills.

**Visual Composition and Digital Artistry:** Animation is a visual art form, and critical thinking extends to visual composition. With information technology, students can leverage digital art software and visual effects tools to evaluate visual elements, refine their artistic skills, and enhance the visual appeal of their animations.

**Data-Driven Insights:** Information technology allows students to gather data and analytics on audience preferences, engagement levels, and industry trends. This data-driven approach enhances critical thinking by enabling students to make informed decisions about their animation projects. They can adapt their creative choices based on real-world insights.

**Collaboration and Communication Tools:** Animation often involves collaboration with diverse teams. Information technology offers collaboration and communication tools that facilitate effective teamwork. Students learn to think critically when communicating their ideas and incorporating feedback from team members, enhancing the overall quality of their projects.

Incorporating information technology into animation learning broadens students' technical skills and enriches their critical thinking abilities. It enables them to approach animation projects with a multidisciplinary perspective, combining creativity and technology to solve complex problems and create immersive experiences for the audience.

## 2.3. Encouraging Self-Directed Learning

One of the critical advantages of inquiry-based learning is its focus on self-directed learning. Students rely heavily on teachers for instructions and guidance in traditional educational settings. However, with inquiry-based learning, students take ownership of their learning process. They actively seek answers to their questions, conduct research,

and engage in independent exploration. In animation learning, this approach empowers students to pursue their areas of interest and develop specialized expertise. They can choose animation techniques, genres, or topics they want to explore further. By taking responsibility for their learning, students develop a sense of autonomy, self-motivation, and initiative. These qualities benefit them during their education and prepare them to be proactive learners in their professional careers.

Information technology provides more convenient independent learning possibilities for animation learning:

**Passion-Driven Learning with Technology:** Self-directed learning enables students to follow their passions within animation, and information technology provides the tools and resources to do so. Whether they're interested in 2D animation, 3D modeling, or visual effects, students can use technology to explore and specialize in areas that align with their interests.

**Real-World Preparedness with Digital Tools:** The animation industry constantly evolves, with new software and techniques emerging regularly. Self-directed learning, supported by information technology, prepares students to adapt to these changes. They become adept at independently exploring new tools, learning from online tutorials, and mastering the latest digital techniques.

**Autonomy and Initiative through Online Resources:** Self-directed learners use information technology to seek answers to their questions and challenges. The internet offers many online courses, forums, and tutorials. Students can access these resources independently, fostering a sense of autonomy, self-motivation, and initiative.

**Problem Solving with Digital Solutions:** Information technology equips self-directed learners with digital problem-solving skills. When students encounter challenges, they can research solutions, troubleshoot technical issues, and leverage online communities to find creative answers.

**Portfolio Development with Digital Media:** Animation students often build portfolios to showcase their skills. Information technology allows students to work on personal animation projects, create digital showreels, and share their work online. These digital portfolios significantly enhance their employability and help them stand out in a competitive job market.

The integration of information technology applications empowers animation students to take control of their education and prepares them to excel in a dynamic and technology-driven industry. It fosters creativity, adaptability, and digital proficiency, ensuring they are well-equipped to thrive in the evolving world of animation.

## 2.4. Building Communication Skills

Animation projects often require collaboration and teamwork, making practical communication skills crucial. Inquiry-based learning provides ample opportunities for students to communicate their ideas effectively, articulate their thoughts, and collaborate with peers [8]. Through discussions, presentations, and critiques, students learn to express their creative vision, provide constructive feedback, and receive input from others.

Clear and efficient communication in animation ensures the entire team understands the project's goals, artistic direction, and technical requirements. By engaging in inquiry-based learning, students develop the ability to convey complex concepts and express themselves visually and verbally. These communication skills enhance their

effectiveness as animators and prepare them for successful collaboration in professional settings.

## **2.5. Nurturing Lifelong Learning**

Inquiry-based learning nurtures a love for learning and fosters a desire for continuous growth. As students engage in self-directed inquiries, they develop a lifelong passion for acquiring knowledge and exploring new ideas. In animation, where trends, technologies, and techniques evolve rapidly, a commitment to lifelong learning is essential for staying relevant and adapting to industry changes. By immersing themselves in a process of inquiry, students acquire skills and knowledge that go beyond the immediate scope of their projects. They learn to seek out resources, evaluate information critically, and stay updated with the latest advancements in animation. This dedication to continuous learning enables animators to adapt to emerging trends, incorporate new tools and technologies into their workflow, and remain at the forefront of their field.

## **2.6. Enhancing Adaptability and Technological Literacy**

Animation is a field that constantly evolves with emerging technologies. Inquiry-based learning is crucial in enhancing students' adaptability and technological literacy. Through investigations and hands-on projects, students gain valuable experience using various animation tools, software, and equipment. By actively engaging in inquiry, students explore different animation techniques, experiment with computer-generated imagery (CGI), delve into virtual reality (VR) or augmented reality (AR) animation, and embrace other emerging technologies. This hands-on experience prepares them for the dynamic nature of the animation industry, where they must adapt to changing environments, adopt new tools and techniques, and leverage technology to bring their creative visions to life.

## **3. Cultivating and Enhancing Inquiry-Based Learning Abilities with Information Technology**

### **3.1. Inspiring Animation Students and Enhancing Their Inquiry-Based Learning Skills.**

In animation, students can ignite their passion for animation production by watching outstanding animated works, experiencing different styles and techniques. Furthermore, using multimedia tools and software, students can engage in interactive learning, deepening their understanding of animation principles and techniques through practical exercises. Multimedia education lets students intuitively grasp various aspects of the animation production process, improving their learning effectiveness and interest. The widespread use of online resources provides animation students abundant learning materials and real-time industry information updates. Students can search the internet for the latest animation technologies and trends, compare and learn from excellent domestic and international works [9].

Additionally, numerous open courses and online teaching resources allow students to choose learning content that suits their needs. By fully utilizing online resources, students can broaden their knowledge, gain insights into the developments in the animation industry, and develop their self-directed

learning and information acquisition skills. For animation students, virtual experiments offer a safe and convenient platform for exploring different animation techniques and creative ideas, simulating various scenarios. Students can quickly adjust parameters and observe results through virtual experiments, providing timely feedback and improvements. This hands-on learning helps students better understand the principles and techniques of animation production, fostering their problem-solving and innovation abilities. Moreover, virtual experiments can save costs, reduce resource consumption, and give students more practical opportunities.

Using multimedia education, internet resources, and virtual experimental learning methods can spark students' interest in learning, enhance their learning effectiveness, and effectively cultivate their inquiry-based learning abilities. These approaches help animation students expand their knowledge, strengthen their practical skills, improve problem-solving abilities, and boost creativity and innovative thinking, laying a solid foundation for their future careers.

### **3.2. Deepening the Understanding of Knowledge and Improving Inquiry-Based Learning Skills.**

Firstly, information technology provides convenience for collaborative learning and communication among students. Students can communicate and collaborate with classmates and professionals anytime, anywhere through online collaboration platforms, social media, video conferencing software, and other tools. No longer constrained by geographical location and time, students can remotely participate in project groups, engage in discussions, and solve problems together. This cross-space and time collaboration approach offers animation students broader opportunities for collaboration, enabling them to obtain opinions and suggestions from different perspectives, promoting idea exchange and knowledge sharing, thereby deepening their understanding and application of knowledge. Secondly, information technology provides students with more learning resources and interactive platforms. Students can freely access learning materials, instructional videos, and outstanding works worldwide through the internet. For example, students can watch excellent animated works to learn various animation techniques and creative concepts. They can also participate in online forums and communities to exchange experiences with other students and professionals. This extensive access to information and interaction opportunities provides students with more learning resources and inspiration, helping them deepen their understanding and application of knowledge. Additionally, information technology also offers students more opportunities for creation and practice. Animation production is a collaborative process, and information technology streamlines teamwork. Students can easily share and edit project materials with team members through cloud storage and file sharing. Meanwhile, virtual reality technology and 3D modeling software allow students to practice and simulate creative work in virtual environments [9-10]. Students can use these technologies for character animation, scene construction, and other practical activities, deepening their understanding of animation techniques and principles. They can collaborate with team members to continually refine and improve their work. Information technology also provides students with a broader platform for presentation and feedback. Through video-sharing websites and social media platforms, students can

share their work with a global audience and receive feedback and reviews from various sources. This open presentation and interaction method can inspire students' motivation to learn and create and continuously improve their work based on audience feedback. Information technology tools can also be used for remote assessment and guidance, allowing professionals to evaluate and advise students' work, helping them better understand and apply their knowledge.

### 3.3. Riching Learning Resources and Expanding Presentation Opportunities.

The creative abilities of animation students can be enhanced through the cultivation of inquiry-based learning skills, and the cultivation of inquiry-based learning skills can also be achieved by stimulating students' creativity [10]. Cultivating inquiry-based learning skills can enhance the creative abilities of animation students. Inquiry-based learning emphasizes students' ability to explore, discover, think, and solve problems actively. In animation production, students need to continuously explore and practice, conduct in-depth research and reflect on animation techniques, creative concepts, and more. By cultivating inquiry-based learning skills, students can actively seek and solve problems and apply existing knowledge and skills to create new ideas and works. They will become keen observers and thinkers, actively trying out various possibilities, thus enhancing their creativity. Stimulating students' creativity also contributes to the development of inquiry-based learning skills. Creativity refers to an individual's ability to create and innovate in a particular field. Creativity is one of the essential qualities for students to become excellent animators in animation. Stimulating students' creativity can be achieved by providing a diverse learning environment and stimuli, encouraging them to think about problems from different angles, explore new creative and technical applications. This creative practice encourages students to explore in-depth, seek solutions, and continuously improve and refine their work through collaboration and communication with team members. Through continuous creative practice, students develop their independent thinking, critical thinking, and problem-solving abilities, thus enhancing their inquiry-based learning skills. Therefore, cultivating inquiry-based learning skills and stimulating students' creativity are mutually reinforcing. Cultivating inquiry-based learning skills provides the foundation for students to engage in in-depth learning and reflection actively. On the other hand, stimulating students' creativity provides a continuous source of motivation and inspiration, prompting students to generate innovations and breakthroughs during their inquiries. Both aspects complement each other, encouraging students to expand their thinking boundaries, form innovative ways of thinking, and develop problem-solving skills.

This two-way relationship provides practical support and impetus for students in their learning and creative endeavors in animation, helping them become outstanding animation professionals with innovative thinking and practical skills.

## 4. Conclusion

Inquiry-based learning in animation learning, supported by

information technology, equips students with the essential skills they need to thrive in a dynamic and competitive industry. By fostering creativity, critical thinking, and self-directed learning, IBL empowers students to become lifelong learners and innovators in animation. Educators are responsible for integrating IBL effectively and utilizing information technology to provide our animation students with the best learning experiences. Embracing these principles can help shape the animators of tomorrow who are equipped with the skills and mindset necessary to succeed in the dynamic and ever-evolving world of animation.

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