

Contribution Details

1653

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Research on the Reform of Information Technology Curriculum in British Primary and Secondary Schools —Analysis Based on Curriculum Value Theory

Xinlei Li, Johan van Braak

Organisation(s): Ghent University, Faculty of Psychology and Educational Sciences

Submitted by: Xinlei Li (Ghent University, Faculty of Psychology and Educational Sciences)

Presenting Author: Li, Xinlei (xinlei.li@ugent.be)

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Proposal Information

With the transformation of the industrial society to the information society, the needs of individuals and society have changed, and different understandings of individual and social values have emerged. Information technology curriculums naturally need to have corresponding values under the social transformation (Liu, 2012), it is necessary to distinguish what is valuable for learning and teaching and dialectically consider whether information technology curriculums value can influence social, personal, and educational values. The value of information technology curriculum in this research refers to its utility and significance to people and society, including information technology curriculum value orientation, value outcomes statements and value relationship between education stakeholders. Value orientation affects the entire life and penetrates all levels of the subject: social, economic, political, etc. and aims to determine the direction, identify the effective way to follow in certain situations, to obtain the facts, thoughts and phenomena that meet the requirements of the society and ideal generated by them, forming the most appropriate attitude and to achieve goals through behavior (Antoci, 2019). In this research, value orientation is to analyze the changes in motivation, knowledge, method, behavior, attitude and ability caused by the value orientation reform of the information technology curriculum. Value outcomes statements as implying what specific gains in knowledge or capacity would appropriately represent achievements of the outcome in question (Hill, 2000). The value outcomes statements in this research refer to students' specific gain in knowledge or capacity that appropriately represents achievements of the learning outcome. With the development of society and education, the existing ICT curriculums in primary and secondary schools in Britain have been questioned by academics and industries (Brown et al., 2014; Webb et al., 2017). The Department for Education (2013) officially published the Computing programmes of study. The change of British information technology curriculum is to meet the needs of society and talent development (Livingstone & Hope, 2010). By studying the contents of the information technology curriculum standards and values in British primary and secondary schools, we can find out new problems and ideas in the development of information technology curriculum. This research mainly solves the problem of the curriculum value orientation and learning outcomes reflected the value outcomes in the change of the national curriculum standards for information technology in Britain. Specifically, the following questions need to be solved: (1) What are the changes in the curriculum value orientation of the British ICT curriculum and Computing curriculum? What specific value outcomes reflected from learning outcomes in the change of information technology curriculum in Britain? (2) Why has the national curriculum for information technology in Britain changed? What are the factors affecting the above changes? (3) From the perspective of learning and teaching, how is the implementation of Computing curriculums in Britain? What information technology curriculum values are embodied? This research is based on the curriculum value theory and analyzes the curriculum value dimensions through social and human development value. The research forms an analysis framework for the value outcomes of the information technology curriculum standards in the British primary and secondary schools. Furthermore, this research analyzes the macro change in the value orientation of information technology curriculums. Meanwhile, this research also compares and analyzes the micro value outcomes from the curriculum standard goals, subject content, evaluation results, implementation status and educational resources.

Methodology or Methods/ Research Instruments or Sources Used

This study comprehensively adopts the content analysis method and comparative research method. Starting from the reform direction and path of ICT to Computing curriculum standards for primary and secondary schools in Britain, this paper analyzes the process, content selection and implementation status of national curriculum standards for information technology in primary and secondary schools in Britain. This research mainly uses the content analysis method to analyze the curriculum value orientation and key influencing factors of the information technology curriculum reform. It also analyzes the curriculum value outcomes and changes brought by the curriculum standards, learning status and teaching implementation. The value outcomes analysis framework of information technology curriculum standards in British primary and secondary schools is constructed based on curriculum value theory, Maslow's hierarchy of needs (1943) and previous research results. The framework quantitatively analyzes curriculum content and attainment target of ICT and Computing curriculum standards of British primary and secondary school. In addition, a comparative research method was used to longitudinally compare the ICT curriculum standards and Computing curriculum standards of the British primary and secondary schools and found differences between the changed curriculum value orientation and curriculum value outcomes. Moreover, content-coding results have been tested on reliability and validity. The quantitative content analysis mainly focuses on the content-coding and frequency count of the content in the ICT curriculum standards and Computing curriculum standards of British primary and secondary

schools. It mainly conducts two aspects of comparative analysis, including a comparative analysis of value outcomes in the ICT curriculum and Computing curriculum content at different key stages, and a comparative analysis of value outcome in the content of the ICT curriculum and Computing curriculum at the same key stage. In addition, the value outcomes frequency count of the evaluation content of the attainment target of ICT curriculum and Computing curriculum in British primary and secondary schools is analyzed. It mainly conducts two aspects of comparative analysis, including the analysis of the value outcomes of ICT and Computing curriculum evaluation content at the same level, and the analysis of the value outcomes of ICT and Computing curriculum evaluation at different levels. Based on quantitative data, this study qualitatively analyzed the purpose of the study, attainment targets, subject content, value orientation, and value outcomes of the curriculum standards. It also qualitatively analyzes the changes in curriculum standards on student learning, teacher teaching, and their value orientation.

Conclusions, Expected Outcomes or Findings

The paper finds out the role and influence of content, stakeholders, and value transformation of curriculum standards for social and student development. It provides a reference for exploring the development of information technology curriculum in basic education, and for stakeholders to understand the value system of information technology curriculum in different countries. For learning objectives, the ICT curriculum highlights knowledge and operation value, processing method and skill value, competence value, practice and integration value. The Computing curriculum emphasizes computational thinking value, comprehensive thinking value, competence value, practice and integration value, knowledge and operation value, and application value of information culture. For curriculum objectives, the ICT curriculum emphasizes processing method and skill value, information social responsibility value, and value of choices of information culture. The Computing curriculum emphasizes computer science knowledge with abilities using computational thinking to solve problems with ethics in information culture. The learning and curriculum objectives are gradually enriched, and subject knowledge and thinking methods are deepened. The value orientation changed from tool application value to science and professional value. There are differences between curriculums' values in the same key stage on moral and cultural value in key stages 1 to 3. The ICT curriculum lacks moral value in key stages 1 and 3, highlighting cognitive and cultural value. The Computing curriculum lacks cultural value in key stages 2 to 3, highlighting cognitive and moral value. Under different evaluation levels, two curriculums are emphasized differently on cognitive, cultural, and moral value. The Computing curriculum is more specific to value outcomes of evaluation content. It provides open space for students to achieve value outcomes of evaluation level, which brings opportunities and challenges to student learning and teacher teaching. The value outcomes of ICT evaluation lack computational thinking value, but more cognitive value, which making value outcomes knowledgeable and applicable.

References

- Antoci, D. (2019). The modern concept of value orientation. *Advances in Education Sciences*, 1(1), 67-84.
- Brown, N. C., Sentance, S., Crick, T., & Humphreys, S. (2014). Restart: The resurgence of computer science in UK schools. *ACM Transactions on Computing Education (TOCE)*, 14(2), 1-22.
- Department for Education. (2013). Computing Programmes of Study: key stages 1 and 2. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239033/PRIMARY_national_curriculum_-_Computing.pdf
- Department for Education. (2013). Computing Programmes of Study: key stages 3 and 4. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239067/SECONDARY_national_curriculum_-_Computing.pdf
- Don Passey. (2017). Computer Science (CS) in the Compulsory Education Curriculum: Implications for Future Research. *Education and Information Technologies*, 22(3), 421-443.
- Hill, B. V. (2000). Seeking a value consensus for education. *Education, Culture and Values Volume II*, 314.
- Kirkman, C. (2010). Computer Experience and Attitudes of 12-year-old Students: Implications for the UK National Curriculum. *Journal of Computer Assisted Learning*, 9(1), 51-62.
- Larke, L. R. (2019). Agentic Neglect: Teachers as Gatekeepers of England's National Computing Curriculum. *British Journal of Educational Technology*, 50 (3), 1137-1150.
- Liu, X. Y., & Dong, Y. Q. (2012). The Dilemma and Mechanism of Realizing the Value of Information Technology Curriculum. *E-Education Research*, 1, 85-89.
- Livingstone, I., & Hope, A. (2010). Next Gen: transforming the UK into the world's leading talent hub for the video games and visual effects industries. Nesta.
- Maslow, A.H. (1943). A theory of human motivation. *Psychological Review*. 50 (4), 370-396.
- Royal Academy of Engineering. (2010). 2009 ICT for the UK's Future. London: Royal Academy of Engineering.
- The Royal Society. (2012). Shut down or restart? The way forward for computing in UK schools. Retrieved from <https://royalsociety.org/-/media/education/computing-in-schools/2012-01-12-computing-in-schools.pdf>
- Tondeur, J., van Keer, H., van Braak, J., & Valcke, M. (2008). ICT Integration in the Classroom: Challenging the Potential of a School Policy. *Computers & Education*, 51(1), 212-222.
- Webb, M., Davis, N., Bell, T., Katz, Y. J., Reynolds, N., Chambers, D. P., & Sysło, M. M. (2017). Computer science in K-12 school curricula of the 21st century: Why, what and when? *Education and Information Technologies*, 22(2), 445-468.
- Wohl, B. S., Beck, S., & Blair, L. (2017). The Future of the Computing Curriculum: How the Computing Curriculum Instills Values and Subjectivity in Young People. *International Journal of Computer Science Education in Schools*, 1(1).

Session Details

16 SES 11 A: ICT in the Curriculum, in Schools and Digital Citizenship

Time:

Wednesday, 08/Sept/2021:

2:00pm - 3:30pm

Session Chair: **Julia Gerick**

Paper Session