Instructional Design Research Trend in China
Based on Content Analysis

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Abstract. This paper mainly uses the CNKI as sources of information to sample the articles from 2008 to 2015 related to instructional design on educational technology journals and uses the content analysis to static and analyzes the instructional design theories, applied researches, research tools and research methods objectively, systematically and quantitatively. The study finds that the achievements of instructional design theories and applications have made, but the theoretical development is far from comprehensive, the application development is imbalance and the study of research tools and research methods have not been explored specially.

Introduction

Instructional design is a bridge subject and specialized approach in the educational technology filed, which effectively combines the learning and teaching theory \cite{1}. Content analysis is a specialized research method in educational technology and has clear, objective, systematic and quantitative characteristics \cite{2}. This study used the development analysis mode of content analysis to static and analyze the articles about Instructional Design Development From four aspects (theoretical research, applied research, research tools and research methods) in CNKI from 2008 to 2015, which contributes to the educators, instructional design researchers and learners, who can directly understand the research hot spots and status quos in recent years and grasp the direction and trend of instructional design research.

Instructional Design Research Trend

The aim of this study is to help educators, instructional design researchers and learners understanding the status and direction and grasping the research trends of teaching design in recent years as well as knowing the shortcomings of in present study, also to provide a reference for future research work.

Content analysis was first produced in the communication field, it is a kind of research method to study literature and describe the content, form and importance of a variety of materials and records objectively, systematically and quantitatively. The application modes of content analysis include feature analysis, development and comparative analysis. This paper uses the development analysis mode, also known as trend analysis. The process is usually first extracting representative data samples and decomposing samples into a series of analysis units, and then judging and recording them strictly according to prescribed categories of classification and dimensions system, the last one is counting and analyzing the results.

Sample Source and Study Object

The objects of this study are 8 educational technology journals of China. Meanwhile, the largest network resource sharing platform CNKI is the source of samples. The author search papers with the Professional method (TI=instructional design AND JN=Journal name) and time limited between January 1, 2008 and December 31, 2015 and the result is totally 415 articles are searched. Statistics are shown in Table 1.
Initials are been used to represent the journal name in table 1 as follows: [ER] is E-education Research, [CET] is China Educational Technology, [OER] is Open Education Research, [CFLE] is Computer-assisted Foreign Language Education, [MET] is Modern educational technology, [DEJ] is Distance Education Journal, [DEC] is Distance Education in China and Primary and [PMITE] is middle-school information technology education.

Table 1. The statistics of the journal articles.

<table>
<thead>
<tr>
<th>Year Journals Quantity</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER</td>
<td>8</td>
<td>12</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>10</td>
<td>5</td>
<td>12</td>
<td>63</td>
</tr>
<tr>
<td>CET</td>
<td>5</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>OER</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>CFLE</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>MET</td>
<td>21</td>
<td>25</td>
<td>13</td>
<td>8</td>
<td>5</td>
<td>13</td>
<td>8</td>
<td>4</td>
<td>96</td>
</tr>
<tr>
<td>DEJ</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>DEC</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>PMITE</td>
<td>28</td>
<td>51</td>
<td>39</td>
<td>18</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>158</td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>107</td>
<td>76</td>
<td>42</td>
<td>30</td>
<td>38</td>
<td>26</td>
<td>25</td>
<td>415</td>
</tr>
</tbody>
</table>

**Category Design**

The paper uses article as an analysis unit and carry out the category from four dimensions of theoretical research, applied research in the field, research tools and research methods. The apply research includes the primary and middle school and higher education (Teaching Design/Case Studies, experimental teaching design, network instructional design, special education), enterprises training, pre-vocational education, teaching software development and other detailed categories. In the article fall into the category table, we developed specific classification criteria as shown in table 2 when journal articles are fall into the category table.
Table 2. The standards of the category.

| theoretica l research | To do the research of instructional design concept, development, status quos and issues with a certain logic theory and research methods, answer the questions of What is instructional design? What instructional design thinking? What do instructional design do, how to do and why etc. |
| research tools | Studies of research, development and introduction of the instructional design research tools. |
| research methods | Studies of research, development and introduction of the instructional design research methods. |
| applied research | Apply the instructional design theory to the classroom teaching, teachers use instructional design theory in various disciplines related to classroom teaching design articles. The teachers’ design-capabilities directly affect classroom instructional design, so the research papers about it will be the classification of this category. |
| primary and secondary schools education, including middle and higher vocational education | Apply the instructional design theory to the online education research, such as e-learning instructional design, distance education teaching design etc. |
| primary and secondary schools education, including middle and higher vocational education | Apply the instructional design theory to the experimental teaching curriculum design in various disciplines of study. |
| primary and secondary schools education, including middle and higher vocational education | Apply the instructional design theory to the Special Education Curriculum Research. |
| enterprises training | Apply the instructional design theory to the training and educating for staffs in enterprises and institutions and other social companies. |
| enterprises training | Researches on developing an appropriate curriculum in use of instructional design theory to educate and guide people before inauguration. |
| teaching software development | Apply the instructional design theory to the design and development of educational software or the teaching platform. |

**Instructional Design Development from Article Analysis**

According to the statistics of the results in Table 1, the trend is obtained in figure 1 that in recent years, the overall instructional design articles published showed a decreasing trend. But H.F. Zhang and other people obtained that the instructional design articles published between 1994 and 2007 showed an increasing state in previous studies [3]. From the statistics in table 1, we found that the research in the field of instructional design significantly changed that researchers are no longer concerned about the number of published articles, but rather focus on the application of the theory in educational practice in recent years. However, articles published in Computer-assisted Foreign Language Education and Distance Education in China are Less than 10, which explained that instructional design theories in foreign language study and remote education research applications are less involved.

**Instructional Design Development from Research Types**

400 valid articles left except the invalid articles (notifications, interviews or meetings) after analyzing in detail based on the category standards before designing. The results after analyzing of
the Instructional design application research is more prominent and followed by theoretical research since 2008, at the same time, there is no specialized articles about research tools and only one about research methods. So, researchers are more biased in favor of combining the instructional design with practical applications such as the field of education and training. Figure 2 shows that applied research accounting for 75% and the theoretical study accounting for 25%, but research tools and methods study 0%. That is, in recent years, researchers still tend to theory and practice of teaching design and research tools and methods as the potent adjunct of instructional design research almost did not get special exploration.

Figure 1. Journal Articles Developing Trends.    Figure 2. The Proportion of Each Research.

Figure 3. Research Types of Flipped Classroom Instructional Design.

Results and Specific Details

Teaching Design Theory

The results of analyzing the theoretical research articles showed as follows: instructional design theory made rich achievements and the study of patterns and principles more, second is to study the current situation and development trend, the next is for the nature, philosophy, cultural orientation, moral of the teaching design and other exploration. Of course, the flipped classroom instructional design and Micro curriculum teaching design became a craze in recent years. 112 valid papers are found in CNKI with the Professional searching method SU=flipped classroom instructional design. The results obtained in Figure 3 that researchers in favor of application study of it in primary and secondary schools education and case studies, such studies accounted for 72%, and other types of research accounted for 23%. And 45 valid papers are found in CNKI with the professional searching method SU=Micro curriculum teaching design. The results obtained in figure 4 that 62% researchers biased in the research of micro course design of primary and secondary schools education and case studies, other studies are online teaching applications, training, the theories and models of micro curriculum design and development. However, there still a problem of wide range but not in-depth study of the status quo in micro course designs. The in-deep of quality education and information technology development will lead flipped classroom instructional design and micro course instructional design into the mainstream.
Instructional Design Applications

It can be clearly seen from figure 5 after recounting the articles of the research type in application areas that people in favor of classroom teaching design in primary and secondary schools education in the applied research, including the study of teaching design capability of teachers, such study accounts for 80% and the article 237. The Anchored Instructional Design, task-driven instructional design, flipped classroom and other instructional design models are been used in the classroom teaching design in recent years. Of course, there are various attempts, for example, S.D. Yin applied the COSPLAY into teaching design in paper Application Research of COSPLAY in Information Technology Teaching [4]. Meanwhile, network teaching instructional design is mainly for online courses, distance education, MOOC etc., accounting for 12% and article 35. However, teaching design application study for experimental teaching design, pre-vocational education, special education are each accounts for 1%, and teaching software development accounting for 2%. At the same time, enterprises training are generally for employees or teachers, and the number of articles such research is still small, accounting for only 3%. These results indicate that the instructional design applied research in these areas to be strengthened.
Research Problems in Instructional Design

Theoretical Development is not Comprehensive

The development of things has two sides. Although China's instructional design made considerable wealth of theoretical research results, the shortcoming is no comprehensive development in recent years. The first one is the elements study. W.Y. Yan mentioned the ten elements of classroom teaching design in the *Elements Reconstruction of the Classroom Teaching Design*, including students, teachers, learning content (materials), learning situations, learning methods, learning resources, learning objectives, learning assessments, learning strategies and innovation space. However, there is no such comprehensive study about this at the present moment. Secondly, the instructional design development in China has more than 20 years, but the localization of theoretical foundation is not solid and theories basically from abroad. So, the comprehensive development of instructional design theory should be combined with real situations. Researchers should put the theory into practice and then make change and summarize from practice. Only in this way, the theory is not just empty talk.

Imbalance of the Application Development

The applied research is in a larger proportion, but its development is uneven. It is seen from figure 3 that study in some important areas are less such as the application of special education, teaching software development etc. The study found that the articles are barely see the solutions on how to improve teaching effectiveness in the field of special education with instructional design and how to reasonably combine the instructional design theory with software development process and how to design effective experimental teaching improving students' comprehensive ability and how to effectively carry out pre-service education and other issues. That is to say, such studies did not get enough attention. Meanwhile, it is found that the situation of the instructional design applied research in enterprises training get inadequate attention has continued so far. Therefore, application of instructional design in various fields should be strengthened in order to ensure its full development.

Lack of Specialized Research on Tools and Methods

It is known from figure 2 that the proportion of research tools and methods almost zero in the field of instructional design. After analysis of all articles, the result showed that only the *Discussion of Instructional Design Research Methods* discussed both "quality" and "quantity" of research methods of instructional design, the rest of the articles only referred to some of the methods and tools during the study but not much proportion. Furthermore, research tools almost not been discussed specially in all articles. In conclusion, instructional design as a special method of educational technology filed has become an independent, but the short board is no specialized research tools and methods on its own research and this short board needs to be filled by instructional design researchers.

Conclusion

The study shows that instructional design research field is still biased in favor of applied research and theoretical research, and classroom and network instructional designs are more than others in the aspect of applied research. But the research methods researched professionally only once. However, there still not find an article mainly about research tools study. Meanwhile, the study summarizes the three issues existing in instructional design, the first one is theoretical development not Comprehensive, the second one is the imbalance of the application development and the last one is lack of specialized research on research tools and research methods.
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References


