A Method to Identify How Librarians Adopt a Technology Innovation, CBAM (Concern Based Adoption Model): Focusing on School Librarians' Concern about Digital Textbooks

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Contents

ABSTRACT

As new technologies change a society, librarians need to understand and adapt to technology innovations. However, most innovations that librarians are supposed to adopt are government-driven or top-down changes; and there have been very few studies conducted to identify any patterns or consistencies in librarians' perceptions of innovation. This paper, therefore, has two research purposes. First, it introduces the Concern Based Adoption Model (CBAM) as one method to gain a deeper understanding of how librarians see such changes. Second, this study identifies school librarians' concerns regarding digital textbooks in South Korea applying the CBAM theory. The test signifies that school librarians present a typical non-user profile, and the pattern anticipates a potential resistance to digital textbooks. Also, it discovers the less experienced and innovator librarians had higher concerns across every stage. The findings underscore a need of various interventions. The CBAM theory suggests, in terms of intense Stage 0 and 1, it is required for school librarians to have events to gain information about digital textbook implementation. Regarding targeted interventions, since the biggest gaps occurs in Stage 4, *Consequence* and Stage 5, *Collaboration*, according to school librarians' experience and adoption style, new school librarians need stronger engagement with the community, which including associations, mentors or peer support, and collaborating with public libraries; innovator school librarians require opportunities to test and present their use of digital textbooks (Hall and Hord 1987).

Keywords: Concern Based Adoption Model (CBAM), Digital Textbooks, Library Concern

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논문접수일자: 2016년 5월 2일 최초심사일자: 2016년 5월 2일 게재확정일자: 2016년 8월 12일
한국문헌정보학회지, 50(3): 5-23, 2016. [http://dx.doi.org/10.4275/KSLIS.2016.50.3.005]

1. Introduction

Almost sixty years has passed since the term ‘information science’ was coined (Rayward 1997) and almost seventy since Vannevar Bush imagined the Memex, a machine that joins and projects two related items onto adjacent viewing positions (Bush 1957). Even a visionary like Bush could not have imagined the level of technological innovation we have today. Personal computers, the Internet, Web 2.0, smart phones, and other technologies have developed quickly, creating vast amounts of information (Beagrie 2006).

Libraries have traditionally “housed the ‘universe of knowledge’ contained in books” (Callahan 1991, 13) and librarians have provided users with tools to access this knowledge. However, rapidly evolving information technology has changed the ways in which information is stored, presented, retrieved, and managed. Due to this change, librarians need to meet information needs by bridging the gap between new technology and library users (Callahan 1991). Librarians, therefore, need to understand and adapt to these innovations (Dority 2006). They also need the skills to mine a body of knowledge within emerging information resources, and to create added value for information.

Although librarians must adopt innovative technologies, how they do so has not been studied carefully. Moreover, a theory and method to examine recipients’ opinion was absent. Hitherto, researchers know only that librarians keep introducing new technologies while continuing to use current ones. This study, however, applies the Concerns Based Adoption Model (CBAM), a theory that identifies how people adopt an innovation and how they transit from old to new technologies to librarians, explaining what the CBAM model is, how it works, and provides an example of how to apply it to digital textbooks. Therefore, the purpose of this study is 1) to introduce a new theory to test librarians’ concern; and 2) to implement the theory discerning school librarians’ concerns and perspectives respecting a hands-on innovation, digital textbooks in South Korea.

2. Literature Review

2.1 Librarians and innovations

The private for-profit manufacturing sectors have abundant literature about innovation, but there are relatively few studies about how librarians view innovation (Jantz 2012). Jantz interviewed six university librarians using Rogers’ definition of innovation as a framework, inquiring into

1) the characteristics of the innovation, 2) the manner in which librarians are involved with it, 3) their motivation to be involved, and 4) its impact upon them. The author found that all six librarians were unanimous about the importance of innovation but that they were not optimistic about it. According to his findings, librarians view innovation as an incremental instrument, largely because libraries have a collaborative management style which all-too-often serves as an impediment to innovation. To change the organizational culture within a library, the librarians highlighted the necessity of leadership, the one managerial element often lacking in a typical library.

The most common library innovation studies involve an introduction of individual innovative technologies. Haynes (1999), for example, examined the concerns of library media specialists using the Texas Library Connection (TLC), a network of member libraries with an integrated bibliographic database serving school library media centers. The author employed the Stages of Concern Questionnaire (SoCQ), which is part of an innovation adoption model, the CBAM, to reveal the relationship between librarian concerns and TLC training, TLC's use, the presence of district library leadership, and the type of internet connection. The results of the study confirmed that all dependent variables, except leadership, influence librarian concerns.

More recently, Stephens (2008) examined the motivation and perception of librarian bloggers by conducting phenomenological research that sought to identify the essence of human experiences. According to Stephens, librarians who used professionally focused blogs were "pragmatic biblio-bloggers," and he identified their chief characteristics as monitoring, gathering, reflecting, sharing, commenting and creating community. Stephens applied the pragmatic biblioblogger model to a survey which found that 40% of librarians liked to share information or insight, and 28% liked to participate in a conversation or a community through blogging. Almost half, 49%, thought blogging was a great tool to enhance professional development and 47% thought that it provided varying perceptions of community. Only 8% of respondents reported that they used a blog for fun, signifying that librarians had a serious approach to this type of innovation.

Similarly, Bianco (2008) surveyed a random sample of 348 medical librarians from the current list of MLA members to find the current usage of social tagging and the motivation for using it. The results shed considerable light on the personal motivations of librarians. Almost 70% of respondents were motivated to use social tagging to organize their resources, to discover information for their own use, and to use it for personal reasons at home. Huston (2009) found that librarians felt confident in their technological skills with chat reference, despite a lack of technical support, but many felt that it was difficult to keep up with emerging technologies. Huston's results, however, differ in some ways from Jantz's: for example, in Huston's study the librarians did not consider

"lack of knowledge by administrators" and "not wanting to try something new for the sake of trying something new" (p. 71) when they adopted a chat reference service. Aharony (2008) found that personality traits of librarians, their computer expertise and motivation, influenced how they used Web 2.0 applications. If librarians felt empowered and challenged by new technology, they were more likely to engage with Web 2.0, which emphasized user-generated content and usability.

To sum up, studies involving innovations showed that the perception of librarians varied with the circumstances and conditions in which the technology was introduced. Although earlier studies agreed that personal characteristics affected the librarians' perception of innovation, the studies could not identify a typical librarian perception. Furthermore, the authors did not identify how librarians' perceptions and attitudes changed toward innovations when they adopt them.

2.2 The Concern Based Adoption Model (CBAM)

For this study, the Concern Based Adoption Model (CBAM) provides a theoretical framework not only to describe but also to predict librarian adoption of innovative technology.

The CBAM was invented to provide a theoretical framework and methodology to identify concerns of the educators and the level of use when implementing new technologies. The origin of CBAM lies in the early 1960's concern-based approach to teacher development and one well-known theory is Fuller's model (Conway and Clark 2003). While tracing preservice teachers' development, Fuller identified the main phases of pre-service changes and, following several revisions of those stages after 1967, established three stages that pre-service teachers experienced.

A decade later, the conceptualizations posited in this theory became the foundation for Hord and Hall's CBAM theory. In the 1970s, staff at the Research and Development Center for Teacher Education at the University of Texas developed CBAM, having identified the seven stages of concern ranging from Stage 0, *awareness*, to Stage 6, *refocusing*, and applied a 35-item questionnaire, SoCQ. They also determined eight Levels of Use (LoU) and developed a focused interview protocol for it. These two methods, integral parts of CBAM, provide a clear picture of each individual's feelings as well as his or her actions. After constantly updating their results, researchers proposed a comprehensive model to embrace the complicated processes of changes by suggesting Innovation Configurations (IC).

The main idea of CBAM is 'concern', a term conveying 'significance' and reflects a complex environment. It is defined as:

> The composite representation of the feelings, preoccupation, thought, and consideration given to a particular issue or task is called *concern*. Depending on our personal make-up, knowledge, and experience, each person perceived and mentally contends with a given issue differently; thus there are different kinds of concerns. (Hall, George, and Rutherford 1977, 5).

Overall, a concern is a psychological action depending on personal make-up, prior knowledge, or experience when facing new experiences or environments and evaluating the need for improvement or change (Hall and Hord 1987). One important thing is that the term, concern has neither positive or negative meanings and the CBAM theory considers a concern to be a dynamic organism. When an individual has intense concern, then he or she is more likely to have "greatly increased mental activity, thought, worry, analysis, and anticipation" (Hall, George and Rutherford 1977, 5).

The assumptions place greater emphasis on the importance of each individual's role in an adoption, while continually stressing the significance of progress and stages of implementation. Hord et al. note that only changes in people's behavior, not in materials or equipment, bring about change.

To maximize the roles of the change facilitators, understanding the people or groups that embrace the innovation is crucial. For this, CBAM has three diagnostic dimensions: 1) Stages of Concern (SoC), which is the main idea used in this study; 2) Levels of Use (LoU); and 3) Innovation Configurations (IC) (Anderson 1997; Dorksen and Tharp 1997). SoC measures the intensity of individual feelings and perceptions about an innovation; LoU demonstrates how well the staff members are using an innovation; and IC maps provide the overall picture of the operational components.

SoC encompasses seven categories. In each stage, individuals experience a particular concern (George, Hall and Stiegelbauer 2013). Although all stages have distinct characteristics, they are not independent of one another. The model assumes that when individuals encounter something new, they are interested in all stages, even if they are more involved in a particular stage. As time passes, an individual's concern in a certain stage subsides, and another concern will be formed.

In Stage 0, *unconcerned*, formerly called *awareness*, individuals are not concerned about the innovation or involvement (George et al. 2013). Stage 1, *informational*, indicates that individuals are generally aware of the innovation and start to develop their interests. However, in this stage, they focus on impersonal, substantive aspects of the innovation rather than on personal concerns. In Stage 2, *personal*, individuals begin to have concerns related to personal matters: they are inquisitive about expected demands, their roles in meeting these demands, the renewal structure of their organization, and any potential conflicts with the commitments of other personnel. In

Stage 3, *management*, individuals consider how to implement the innovation efficiently, and how to make the best use of information and resources. Issues of managing, organizing, and scheduling may arise. In Stage 4, *consequence*, individuals have intensive concerns about the effect of innovation on students, including the relevance of the innovation, the evaluation, and changes to improve student outcomes. In Stage 5, *collaboration*, individuals focus on how to collaborate and cooperate with others when applying the innovation. Lastly, in Stage 6, *refocusing*, individuals focus on how to improve the innovation's applications, how to maximize the benefits of the innovation, and how to modify current usage to provide a more effective alternative.

The seven stages of concern cover three types of concern: Self, Task, and Impact. *Self-concerns* are low level concerns which "evolve around general characteristics, effects, requirement of use and financial or status implications of the innovation" (Samiei 2008, 26). *Task concerns* are associated with the process and task-related matters. *Impact concerns* reflect a more advanced level of involvement than other concerns.

When educators initiate an innovation's use, they typically have intensive *self-concerns* (Stage 1, *informational*; Stage 2, *personal*), and want to know more about the innovation and to discover any changes that the innovation might bring. Educators will also be eager to know about when the innovation will be implemented, who will be charged, and how it will work. Even though educators may not say so openly, they might have intense personal concerns in the pioneering phases. Teachers might also worry about their ability, responsibility, and mistakes or changes to their work routine.

Task-concerns (Stage 3, *management*) can be most intense in the latter part of innovation application (Hord et al. 2006). During the early stages of use, educators will regard management affairs such as how they meet various student needs and learning styles, maximize educational effects, prep-time before class, and how to organize classroom procedures and materials.

When the innovation catches on across schools, and its influence is pervasive, educators may hold intense *impact-concerns* (Stage 4, *consequence*; Stage 5, *collaboration*; Stage 6, *refocusing*). Only a few may reach this level. Such concerns may include the results of activities regarding to the innovation, how well they collaborate, and how they might improve this application of the innovation.

Level of Use (LoU) is the second dimension of CBAM. As mentioned earlier, the primary responsibility of the change facilitator is to guide individuals to the successful implementation of the innovation. To do this, they need to know how well individuals are using the innovation. LoU describes "the behaviors of the users of an innovation through various stages - from spending

most efforts in orienting, to managing, and finally to integrating use of the innovation" (Hord et al. 2006, 54). LoU is a criterion to find out how individuals might use or not use the innovation. Since LoU assesses behavior, researchers need to employ a focused interview with intensive observation (Hall and Hord 1987).

Finally, Innovation Configuration (IC) is the third diagnostic dimension of CBAM. The IC determines characteristics of the innovation and works as a framework of reference when the innovation is implemented. The IC is developed to gather and summarize data "identifying the basic components of an innovation and, within each component, identifying the variations that describe how individual teachers might use the components in their classrooms" (Hall and Hord 1987, 116). An IC map can demonstrate what a new practice looks or does not look like, and illustrates the scope of innovation that has been implemented.

To provide practical advice to school librarians implementing innovations, CBAM researchers therefore developed *incident intervention*, "an action or event or a set of actions or events that influences use of the innovation" (Hall and Hord 1987, 143). The series of events are varied, the key criteria for which are 1) the presence of action(s) or event(s) and 2) an observable effect (or potential for an effect) from using the innovation (Hall 1979, 31). In a discussion part the paper introduces interventions used by CBAM theorists, integrating various events which can, in turn, become interventions for school librarians.

According to Anderson's (1997) analysis, CBAM is a powerful tool to have numerous advantages and benefits. It is a capable means for evaluating top-down and bottom-up innovations. CBAM proves an innovation's real worth when educators introduce it. This method is applied when innovations in curriculum and instruction are occurring.

3. Methods

3.1 Practical uses of the CBAM regarding digital textbooks in Korea

As one of applications of the CBAM, this study shows CBAM to be an essential tool for investigating school librarian concerns, including their perceptions, feelings, and attitudes about digital textbooks, the latter being the latest innovation in South Korean schools. As a part of a school reform, the Education Ministry of South Korea announced a digital textbook initiative on March 8, 2007 (Kim and Jung 2010). In order to solve private education problems and strengthen

the competitiveness of schools, the plan to develop digital textbook systems included six phases occurring between 2007 and 2011. The implementation was expected to create a learner-centered environment, extend an overseas market, and reduce the learning and digital gap in hopes of raising achievement among a neglected class of students. Since then, the Korean government has been developing digital textbooks that combine various ubiquitous technologies (Lee et al. 2012). The South Korean Ministry of Education, Science and Technology (MEST) is conducting pilot studies (Kim and Jung 2010). Hundreds of elementary and middle schools around the country during 2014 were using digital textbooks.

Although school librarians' roles for digital textbooks are not agreed upon yet, the implementation of digital textbooks can expand school librarians' roles (Mardis et al. 2010). School librarians have been in charge of traditional textbooks based on 'Libraries Act' (Ministry of Culture, Sports and Tourism 2007, Article 38) stating school librarians' job is "Collection, organization, preservation, and provision of services of materials necessary for school education; Combined administration and provision for use of the educational materials kept by a school." Also, school librarians' roles include "construction of the information sharing system utilizing information management system and communication network and provision for use of such system" in the same law (Ministry of Culture, Sports and Tourism 2007, Article 38).

Since the Korean government's initiative, *Smart Learning* (Ministry of Education Science and Technology 2011), to use digital textbooks in schools, librarians have had to adjust accordingly. Although the government has a plan to transfer to the digital textbooks, there is no published research about librarians' views, and a pressing need exists to understand their opinions, if only to draft effective policies and to find out how best to develop and support new programs.

3.2 Study design

This research leverages the advantages of survey design by employing the Stages of Concern Questionnaire (SoCQ) to identify school librarians' stages of concerns. Because of its value in helping to explain patterns of concerns and attitudes, the SoCQ is widely used. It consists of 35 items, using a seven point Likert scale.

In terms of the population of this study, the 2013 Korea Library Yearbook (Ministry of Culture Sports and Tourism & Korean Library Association 2014) reported 5,087 school library personnel (including 674 school librarians) who were classroom teachers with library certificates. To select the participants for the survey, the researcher applied availability sampling, sometimes known

as convenience sampling. The researcher created the survey via Qualtrics, which provided the researcher with a user-friendly interface for setting up the survey for participants to access via various devices, including computers and mobile phones.

Regarding the survey in South Korea, the survey was conducted over one month, from November 12th through December 13th, 2014, local time. The staff of the Korea School Library Association sent out the first promotional emails to about 2,000 school librarians on November 14th. The remaining emails were distributed twice during the survey on November 19th and December 2nd. During this month, the survey was opened 769 times: 291 participants started the survey, while 259 of them actually completed it.

All results retrieved from the surveys were converted into Microsoft Excel 2013 to allow for proofreading. The Excel file was protected, with the password known only to the researcher. The researcher screened to find outliers and missing values. For statistical analysis, the raw data were entered in the Statistical Package for Social Sciences (SPSS), version 21.0. The overall Cronbach's alpha for the Korean SoCQ was 0.955, showing that the survey questionnaire had a strong internal consistency. Each stage's Cronbach's alpha is greater than 0.6, confirming that each stage has good internal consistency.

4. Findings

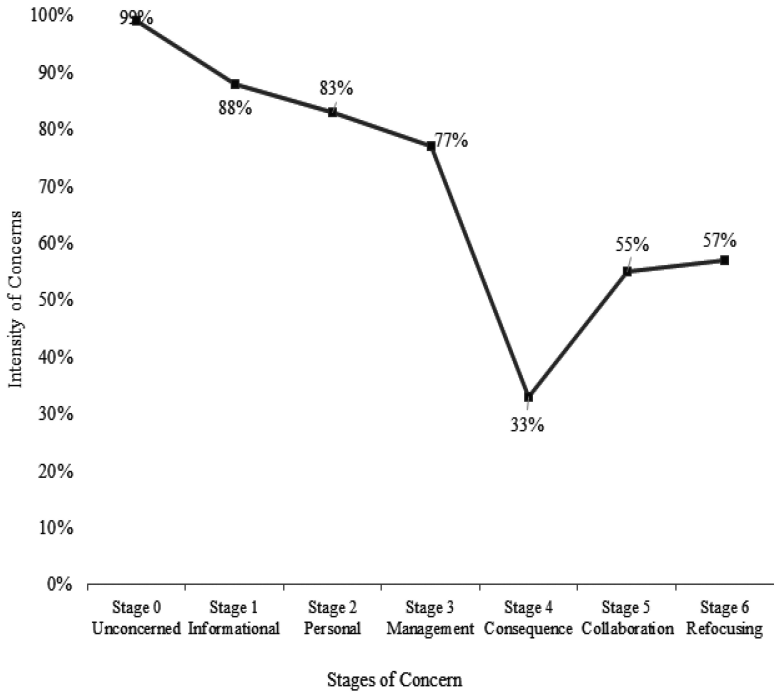
The survey discerned the answers from these three research questions: 1) "What are the school librarians' highest stages of concern surrounding the implementation of digital textbooks?", 2) "Is there a significant relationship between school librarians' stages of concern regarding digital textbooks and those teachers' experience in years?", and 3) "Is there a significant relationship between school librarians' stages of concern regarding digital textbooks and those teachers' technology adoption style?" Here is an analysis regarding CBAM model.

4.1 School librarians' stages of concern

The first research question, was about the school librarians' highest stages of concern surrounding the implementation of digital textbooks. The study identifies the peak stage of concerns for South Korean school librarians is Stage 0, as illustrated in Figure 1. The intensity of each stage was 99% in Stage 0, 88% in Stage 1, 83% in Stage 2, 77% in Stage 3, 33% in Stage 4, 55% in

Stage 5, and 57% in Stage 6.

Figure 1 indicates that school librarians had higher percentiles in Stages 0, 1, and 2. This signifies a typical non-user profile, showing more intensity during the *Self* stages [Stage 0, *Unconcerned*; Stage 1, *Informational*; and Stage 2, *Personal*] (Hall and Hord 1987). CBAM model analyzes this pattern as Korean school librarians have little concern about digital textbooks and were not yet involved with the transition (George et al. 2013). In other words, other innovations or activities attract school librarians' concerns now over digital textbooks. For non-users, the intensity at Stage 0, *Unconcerned*, is not as important as the variations in Stage 1 and Stage 2 (George, Hall and Stiegelbauer 2013), which means that school librarians focused on learning about digital textbooks and were concerned about their personal roles while they were occupied with other innovations.



〈Figure 1〉 School Librarians' Stages of Concern

If Stage 0, *Unconcerned*, is eliminated from the Korean SoC profile, Stage 1, *Informational*, is the stage with the highest concern. George et al. (2013, 8) describe the high concern on Stage 1:

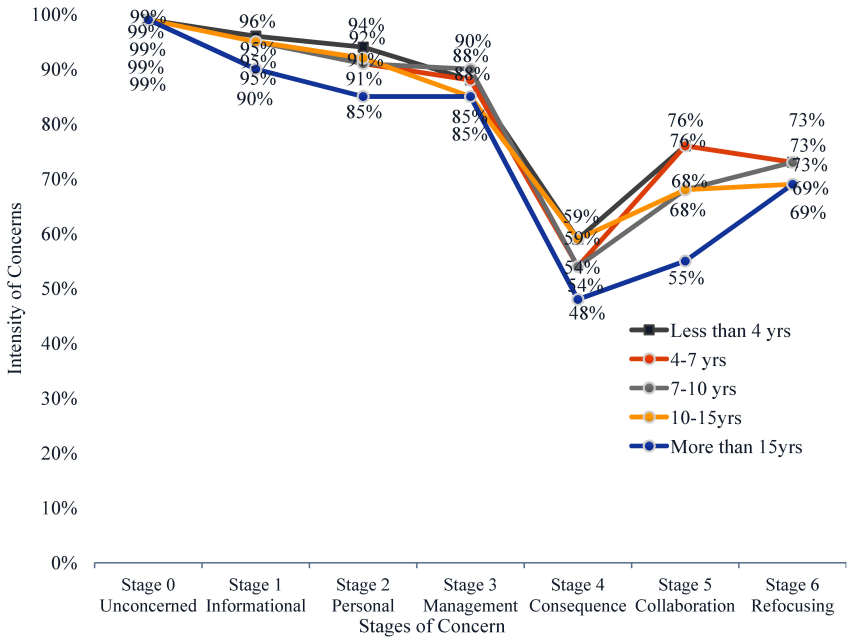
> The individual indicates a general awareness of the innovation and interest in learning more details about it. The individual does not seem to be worried about himself or herself in relation to the innovation. Any interest is in impersonal, substantive aspects of the innovation such as its general characteristics, effects, and requirements for use.

The last notable pattern is a slight tail-up pattern in Stage 6, *Refocusing*, which implies that participants might be resistant to digital textbooks. Interestingly, for the whole pattern, the Stage 6 tailed up at the end of the curve. This conveys that Korean school librarians did not have an opinion about opportunities that could compete with digital textbooks. In CBAM theory, tailing-up Stage 6 implies a negative attitude of school librarians toward digital textbooks.

4.2 School librarians' stages of concern regarding teaching experience

The second research question asked about the relationship between school librarians' stages of concern regarding digital textbooks and their years of teaching experience. 259 school librarians have worked for an average of 7.5 years, with a mode of 5 years and a median of 7 years. Participants were evenly distributed across the categories: 55 in "less than 4 years" (21.2%), 61 in "4-7 years" (23.6%), 72 in "7-10 years" (27.8%), 58 in "10-15 years" (22.4%), and 13 in "more than 15 years" (5.0%).

Overall, the more experience school librarians had, the lower their intensity of concern. Figure 2 indicates that School librarians with more experience demonstrated a lower intensity of concern across all stages, while new teachers demonstrated higher concerns. New school librarians had the highest intensity in all stages except for Stage 3 (7-10 years): Stage 0 (99%), Stage 1 (96%), Stage 2 (94%), Stage 4 (59%), Stage 5 (76%), and Stage 6 (73%). This implies that they were very eager for, and looking forward to, the innovation. The stage that showed the biggest gap between the highest and lowest intensity was Stage 5, Collaboration with a 21% gap. While the groups "less than 4 years" and "4-7 years" expressed 76% intensity, the group "more than 15 years" expressed only 30% intensity.



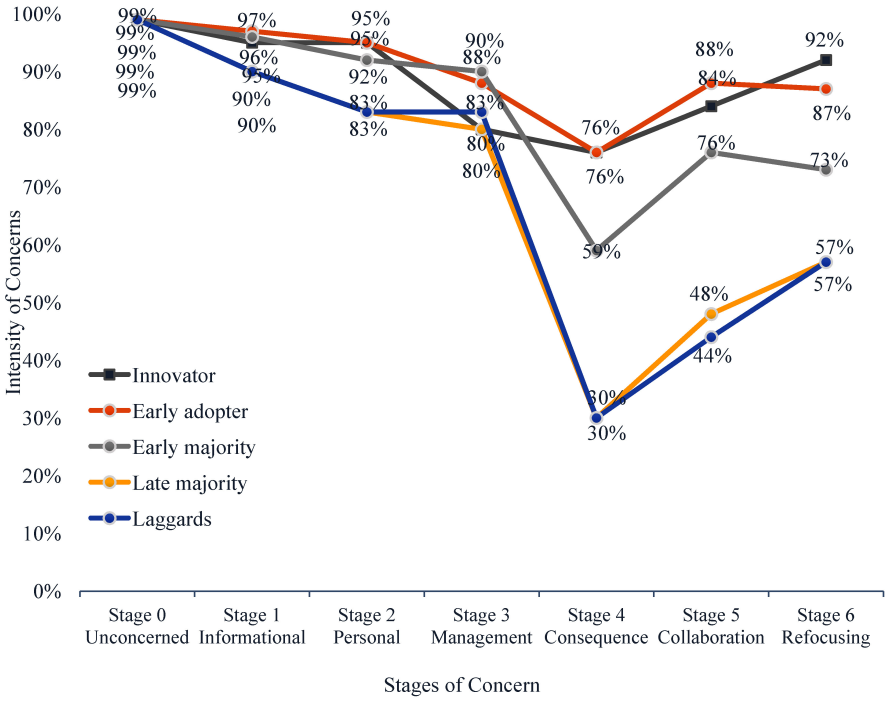
〈Figure 2〉 The Stages of Concern Profile with School Librarians in South Korea according to Their Teaching Experiences

4.3 School librarians' stages of concern regarding technology adoption style

The third research question aimed to find out the relationship between school librarians' stages of concern regarding digital textbooks and their style for adapting technology. The survey categorized school librarians in five categories of adopters based on Rogers (1983)'s theory: *innovators* (the first to adopt, n=4, 1.5%), *early adopters* (the early ones who adopt innovation before most other people do, n=27, 10.4%), *early majority* (the careful ones who adopt innovation after seeing it used successfully, n=172, 66.4%), *late majority* (the skeptical and traditional, n=35, 13.5%), and *laggards* (the last to adopt, n=21, 8.1%).

As Figure 3 portrays, school librarians who adopt technology quickly show more intense concerns over the stages. The early adopter group, however, had more concerns than the innovator group throughout every stage except Stage 6, Refocusing (innovators at 92% and early adopters at 87%). Bigger gaps appear on Impact concerns, particularly Stage 4, Consequence: while the innovator and early adopter groups show 76% intensity, the late majority and laggards groups show only 30%. Participants who adopt innovations quickly are thus more concerned about the impact of digital textbooks on students. Also, Stage 5 (44%) and 6 (35%) displayed bigger gaps between

school librarians who adopt innovation either quickly and slowly, implying that school librarians who adopt innovations rapidly are interested in coordination and cooperation with other teachers to explore more benefits regarding digital textbooks.



〈Figure 3〉 The Stages of Concern Profile with School Librarians in South Korea according to Their Innovation Adoption Style

5. Discussion and Suggestions

The findings confirm that the concerns of the Korean school librarians tended to fall within the first three stages, Stages 0, 1 and 2. There are several points to discuss. First of all, the findings agree with Hughes-Hassell and Hanson-Baldauf's (2008) research, which states that one of the barriers to technology integration is a lack of knowledge about how to use the technology, either personally or instructionally. Since the Stage 1, *Informational* score was higher than the Stage 2, *Personal* score, this might indicate that Korean school librarians retained "a positive and proactive perspective, with little fear of the personal effects a specified innovation might have" (George

et al. 2013).

In terms of the potential resistance, various groups expresses tailing-up Stage 6, Refocusing, which implies a negative attitude of school librarians toward digital textbooks. In particular, the most experienced group shows the biggest gap among all categories. Participants who have more than 15 years working experience had a 14% gap (Stage 5=55% and Stage 6=69%). The sub-category pertaining to how fast they adopt the innovation, also, showes tailing-up Stage 6. “Innovators” had an 8% gap (Stage 5=84% and Stage 6=92%); “late majority” had a 9% gap (Stage 5=48% and Stage 6=57%); and “laggards” had a 13% gap (Stage 5=44% and Stage 6=57%).

Moreover, the SoC profiles, according to librarians’ characteristics, such as experiences and adoption style, illustrate big gaps in Stage 4, 5 and 6. An analysis of the findings determines that the factors stimulating Stage 1 concerns are having less teaching experience and a faster innovation adoption style. In particular, the SoC profile of novice school librarians notes those who have the least teaching experience have the greatest need for information about digital textbooks.

As mentioned above, Hall and Hord (1987) offered example interventions for each stage of concern; and this study investigates interventions for each profile. Above all, the overall SoC profile emphasizes the requirement of expressing little concern about innovation for intense Stage 0, *Unconcerned*. For school librarians who are highly unconcerned, interventions, including those “involving teachers in discussions and decisions, sharing information to arouse interest and taking steps to minimize gossip and inaccurate information” can be provided (Hall et al. 1987, 44). It means events that link the innovation to significant areas of interest of the teachers are very important, sharing information to increase interest by school librarians and to encourage individuals to talk about the innovation with others are particularly helpful. For example, information-exchange strategies, such as daily conversation, guest speakers, brochures, periodicals, one-on-one conversations, and vendor presentations, can arouse interest in digital textbooks. As for professional development, the methods this study recommends include attending college/graduate school, participating in conferences, school visits, short media presentations, and workshops. Administrators can help librarians develop supportive organizational arrangements, broadcasting information/materials, and provide consultations, reinforcing administrator advocacy and support by holding sessions to share the opinions educators have about digital textbooks and training. Associations, listservs, and public library literacy classes will excite librarian interest in digital textbooks.

For targeted interventions, research question 2 and 3 detects that there are bigger gaps in Stage 4, 5 and 6 according to librarians’ teaching experiences and innovation adoption style. It means, school library groups that had different teaching experiences and innovation adoption style present

quite divergent levels of concern about what are impact of digital textbooks (Stage 4), how to collaborate (Stage 5) and how to improve a practical use of digital textbooks (Stage 6). In particular, Stage 5, *Collaboration*, expresses the highest gap between librarians who had less than 7 year teaching experience (76%) and those who had more than 15 year experience (55%). The specific interventions to facilitate and encourage Stage 5, Collaboration, the CBAM theory provided, include exchanging ideas, improving group work skills and resources through an organizational development expert, and demonstrating school librarians' work with colleagues who have less knowledge (Hall and Hord 1987). However, the best promotion of collaboration and awareness is engagement with the community, which includes participating in associations, obtaining mentors or peer support, and collaborating with public libraries. In addition, according to adoption type, the biggest gap occurs in Stage 4, *Consequence*. While the innovator and early adopter groups show 76% intensity, the late majority and laggards groups show only 30%. School librarians with concerns in Stage 4, need continuous encouragement rather than unilateral instructions. People in this group require opportunities to refine their use and promote their skills. School librarians who are interested in Stage 4, *Consequence*, might locate free and downloadable educational resources or training materials for digital textbooks, or build a collection which links digital textbook curriculum with relevant resources.

The researcher believes that these interventions can be very constructive for school administrators and policy makers to formulate new professional development programs or polices for school librarians.

6. Conclusion

As new technologies change society, libraries and librarians are not only placed at the epicenter of this change but are expected to lead innovation adoption. However, most innovations that librarians are expected to adopt are government sponsored and technical support is thin. This paper has introduced CBAM as one method to gain a deeper understanding of how librarians see such change, and, as one example of CBAM at work, it shows the stages of concern about the digital textbook initiative for school librarians and how to support its implementation.

The results show Korean school librarians expressed high Self concerns in Stages 0, 1 and 2. This mirrors a typical non-user profile, and indicates that school librarians were not fully aware of digital textbooks and were more focused on other responsibilities. However, the high percentages

of concern in Stages 1 and 2 also suggest that they are open to digital textbook implementation and need more information about the innovation (George, Hall and Stiegelbauer 2013). Moreover, the overall profile implies a potential resistance to digital textbook initiative.

The findings related to librarians' characteristics, also, indicate several interventions that the schools and education field can apply. The stage of concern profile with Korean school librarians according to their teaching experiences depicts the biggest gap in Stage 5; and this finding suggests collaboration skills to novice librarians. The biggest gap was found in Stage 4 according librarians' adoption style. It implies school librarians who have an innovation inclination may need opportunities to promote their ingenuity to lessen their concern.

This study can be meaningful to the real world. The results of the study helps school librarians gain a deeper understanding of both digital textbooks and how their colleagues perceive them. It shows the events to distribute to information are imperative.

For library professionals, this study can be significant because it is the first opportunity to share other librarians' stages of concern regarding an innovation in Korea. Above all, the methodology of this study informs researchers about new theories and research tools by incorporating the CBAM theory and the Stages of Concern Questionnaire into the library field. The author hopes that further ideas are applied for future studies based on the foregoing method and results.

Besides school librarians, the knowledge from the study assists school administrators, who are in charge of school reforms like digital textbooks, in facilitating the adoption of digital textbooks via their school librarians and school administrators. The result of this study, in particular, *incident intervention*, suggests various improvements to reduce the very real (and realistic) concerns of school librarians for them: offering new avenues for exchanging information about digital textbooks; and, providing tailor-made training programs. The findings from the study also provides school administrators with timely information about personalized professional development for schools. By understanding the stages of concern, school administrators can provide appropriate human resources.

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