# Understanding Parental Management of Information Regarding Their Children

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**Abstract.** Parents and caregivers need to process large volumes of information regarding their children's education. Effective parental management of this information is critical for parents to actively participate in their child's educational development. However, existing educational information management tools are designed from the perspective of the educator or student, not the parent. The objectives of this research were to identify how parents currently manage their children's educational information and identify areas where challenges are perceived and/or realized for parents managing information regarding their children's education. Two surveys were designed and conducted to gather the data. The first survey was conducted to understand the types of information parents receive regarding their children, ascertain a high-level view of what is done with the data and if there were any perceived difficulties in managing any particular type of data. Based on the results of the first survey, another survey was conducted that focused primarily on parental management of their children's educational information. The results confirm that parents must manage a large volume of information regarding their children. The majority of issues related to this information management are associated with educational and medical information. Regarding educational information management, web-based software applications used by school districts allow parents to keep track of their students' academic progress for the school year, but do not effectively allow parents to compare progress across years, integrate educational information from other sources or organize information in ways that may better meet the needs of the parent. For these reasons parents find themselves interfacing with numerous data sources or tools to maintain a current understanding of their children's academic progress. Few tools are available and/or used by parents to manage the data. The results support the fact that parents need technological solutions to improve their management and use of educational information regarding their children.

**Keywords:** Parents · Education · Personal Information Management · PIM · Information organization · Questionnaire based survey

## 1 Introduction

The involvement of parents has been widely discussed as a major contributing factor in the development of children. Research evidence shows children whose parents are

involved in their learning perform better in school, both academically and behaviorally (Patrikakou 2008). In Carpe Data, Van Kleek, et al. suggested that a "common goal for the release of [open data made available by the government] has been to provide end users with the ability to make more informed decisions pertaining to their health, wealth, and well-being" (Van Kleek et al. 2013). The motivation to provide information to parents regarding their children is similar. Because the importance of parent involvement in their children's development is recognized, parents are often overloaded with their children's medical, educational, social, extracurricular and financial information. The idea is that parents will use the provided information to make informed decisions regarding the health, education, finances, etc. of their children.

People can be overwhelmed by available information due to jargon, volume and other factors. This can degrade the quality of their decision making (Pratt et al. 2006). For this reason, it is not unusual for people to turn to technology for help with managing data. However, technical solutions to assist parents in the management of information regarding their children seem to be lacking. Existing educational information management tools are designed from the perspective of the educator or student, not the parent. Getting a better understanding of how parents receive and share information regarding their children as well as the purposes for which parents use the information can lead to the development of technology to assist them. This can lead to improved parental monitoring of the progress of their children, the ability for parents to more easily identify trends and anomalies in their children's development and improved effectiveness of communications with providers and educators. In the short term, a better understanding of the information usage patterns of parents may lead to the development of more structured experiments and research studies.

The objectives of this research were to identify how parents currently manage their children's educational information and identify areas where challenges are perceived and/or realized for parents managing information regarding their children's education. Literature review and online surveys were conducted to gather the data. The first survey was conducted to understand the types of information parents receive regarding their children, ascertain a high-level view of what is done with the data and if there were any perceived difficulties in managing any particular type of data. Based on the results of the first survey, another survey was conducted that focused primarily on parental management of their children's educational information.

## 2 Related Literature

Areas reviewed included Personal Information Management (PIM), data integration and existing applications and tools relevant to educational information. The topics of the reviewed literature can be categorized as PIM and data integration; parents accessing educational resources and student use of technology for organization and learning; and information management by teachers and administrators. The management of personal information, whether that of one's self or one's child, shares the same basic requirements. For this reason, literature pertaining to PIM was reviewed. The management of personal information, whether that of one's self or one's child, shares the same basic

requirements. As described by Buttfield-Addison et al., PIM is concerned with the study of the process of information capture, organization and re-finding of information individuals deal with in daily life (Buttfield-Addison et al. 2012). Although tools and apps exist to facilitate communication between parents and teachers, no tools for parental management of information regarding their children's education were identified in this research. For this reason, tools used by teachers and other educators were reviewed with the motive that these could be used to model a solution for parents.

Common concepts resonated throughout the literature regarding the characteristics of personal information and basic requirements for PIM tools. Those concepts that are of particular interest are listed below.

- Personal information collections include content in various forms (documents, Web pages, mail, notes, calendars, address books, etc.) (Bruce et al. 2004)
- Personal information collections include structures for representing and organizing this information (folder hierarchies, piles, lists, etc.) (Bruce et al. 2004)
- Personal information collections include pointers to information (people, links, Favorites, etc.) (Bruce et al. 2004)
- Information management systems must seamlessly integrate and correlate information across a variety of media, sources and formats (Callan et al. 2007).
- PIMs ensure having the right information in the right place in the right format and of sufficient completeness and quality to meet a current need (Ma et al. 2007).

The method(s) by which information management tools should meet those functions were not so consistent. Some argued that the development of tools alone could not achieve the desired level of information management functionality, but the key is in standardization. Jones and Anderson proposed standardizing metadata using Extensible Markup Language (XML) (Jones and Anderson 2011, 2012). Karger and Jones discussed five approaches of data unification to meet the information management goal. The approaches are implementing a standard data type, unified presentation, implementing a unified namespace, grouping, metadata standardization, cross-reference and relations. These tie in with Jones and Anderson's recommendation regarding cross-reference and relations as means to support information management (Karger and Jones 2006).

Still other researchers proposed the use of digital libraries. Per Ma et al., digital libraries either have relatively stable collections or rigorous routines for adding new documents. The researchers proposed that personal digital libraries must handle changing collection and that storage locations may not be constant. Another difference between traditional digital libraries and personal digital libraries as described by Ma et al. is that traditional digital libraries have control over the data formats it contains, however there can be no limitation on the formats in personal repositories because in most cases the user does not have control over the formats in which data is provided (Ma et al. 2007). Tagging was also presented as an approach for information management (Kazai et al. 2010). Tagging and metadata standardization are similar, however many of the researchers who proposed tagging did not go as far to recommend standardizing the metadata using XML.

Pratt et al.'s research regarding personal health information management uncovered challenges related to integrating personal, professional and health-related information, using integrated information to make health decisions and sharing information while maintaining personal privacy (Pratt et al. 2006). These challenges are also applicable to parental management of information regarding their children. Parents have access to personal information, like family history and professional information given to them by providers, educators, etc. As mentioned previously, the desire is for parents to use the information they receive to make decisions regarding their children.

Another aspect of PIM is understanding the reasons why people choose to keep information and the methods by which people deem information useful. Oh and Belkin's research presents the forms of information people keep and their reasons for keeping it. Oh and Belkin found that some reasons for keeping personal information were to re-use the information in the future, as a reminder of tasks that need to be performed, to record or create personal archives and to share with others. Depending on the reason the data was kept, people kept the information in paper form, as an electronic file, email, bookmark (for web information) or photographs, either digital or printed (Oh and Belkin 2011). An excerpt from one of the tables from Oh and Belkin's paper is presented in Table 1.

**Table 1.** Reasons for keeping different forms of information (Oh and Belkin 2011)

|  | Paper | Electronic file | Email |
|---|---|---|---|
| To re-find/re-access information | ● | ● | ● |
| To record memories/to create archive | ● |  | ● |
| To remind tasks | ● | ● | ● |
| To share with others/to show to others | ● |  |  |
| To express and reinforce identities | ● |  |  |
| To preserve the original format | ● |  |  |
| To allay fears of loss |  | ● |  |
| To manage tasks/time/info/contacts/schedules |  |  | ● |
| To make backups |  |  | ● |

Jones, Dumais and Bruce presented research that showed how users made decisions on what information to keep and what information to leave in place with respect to online data in particular. They provided insight into how users make their keeping and leaving decisions where "keeping" involves downloading or saving the information and "leaving" involves creating or saving a link to find the data in place at another time. The researchers were surprised to find that even when users used bookmarks or favorites, they were still more likely to use a search engine to find the information again instead of referring to the saved link (Jones et al. 2002).

As parents acquire information regarding the education of their children via different means, the ability to integrate data is critical to their management of such information. PIM can be accomplished through technical and non-technical means as discussed by Trullemans and Signer (2014). Their study looked at organization and re-finding strategies in physical and digital space. The study did not find any correlations or

dependencies between respondents' digital organization and retrieval method and their physical organizational and retrieval methods. The lack of correlation between methods that work well in digital space versus physical space may have contributed to the transitional issues and should be considered. Other sources describe the challenges teachers and administrators face when attempting to transition from paper-based to technology-based solutions to manage information (Bishop 2002; Marcu et al. 2013; Piper et al. 2013; Turner 2010). Marcu et al.'s paper Why Do They Still Use Paper? Understanding Data Collection and Use in Autism Education summarizes a study on why many autism education programs still use paper to collect student data vice a technical solution. Reasons for why staff members use paper to collect data are data needs are complex and non-standard, immediate demands of the job make data collection challenging and existing technology is inadequate (Marcu et al. 2013).

As previously stated, the motivation for schools to provide additional information with increased frequency to parents is similar. Information is given under the assumption that it provides parents with the ability to make more informed decisions pertaining to the education of their children. Many schools have on online tools that parents can use to access their children's educational information.

The majority of the resources found discuss educational related information management needs of parents related to children with learning disabilities. However, many of the recommendations are applicable to children who do not require learning assistance. The educational information parents should manage as recommended by the Wrights and Crabtree includes provider information, Individualized Educational Programs (IEP), evaluations by the school system, medical records, progress reports and report cards, standardized test results, notes on your child's behavior or progress, correspondence with teachers, special education administrators and evaluators, documents relating to discipline and/or behavioral concerns and samples of schoolwork (Crabtree 1998; Patrikakou 2008). The Wrights also recommended documenting the following information about each file/record maintained: date, author, type and significance (Wright and Wright 2008). In a software tool this information may be recorded as metadata.

As identified by Van Kleek et al. as an issue, the wealth of available information cannot be used as intended to influence decisions or actions if the data cannot be accessed, organized, processed and re-accessed in ways that are meaningful to the user. Data integration is challenging because it involves combining data and/or "data systems that were developed for slightly (or vastly) different […] needs (Van Kleek et al. 2013)." Regarding their children's education, parents must manage information from a variety of sources including, but not limited to, teachers, administrators, counselors, advocates and tutors. Each of these may have a different method for conveying the information to parents. Those methods may or may not align with each other or with the parent's preferred method(s) for receiving educational information about their children.

Prince George's (PG) County school system uses the electronic student information system, SchoolMAX. SchoolMAX allows authorized caretakers to log in from any computer with an Internet connection and view the child's student information, including current attendance records and assignment scores. PG's version of SchoolMAX allows parents or guardians to view a child's educational records for as long as they are a part of the PG County school system. Parents are able to look back at

previous school years, view grades, tardiness, progress reports and report cards. ParentCONNECTxp is the electronic student information system used by Anne Arundel (AA) County Public schools. ParentCONNECTxp has pages for student information, assignments, report card grades, attendance and school information. Like SchoolMAX, it also allows parents to view information regarding each child enrolled in the school system using a single login. Teachers are usually required to update the information on the sites weekly, at a minimum. Reviewing information regarding their children's education via the school sites affords parents more insight into their children's academic progress than what they can glean from report cards and progress reports alone. This more frequent access to information could enable parents to influence change in derogatory behavior or address learning challenges and see the results of their involvement sooner. Unfortunately, as documented by Roshan et al., information that is updated or entered too frequently may not be reviewed by parents because they may be overwhelmed by the volume of available information or they simply do not have time to access the information in accordance with the frequency with which it is provided (Roshan et al. 2014).

According to Piper et al., in some educational communities there has been a shift "from measuring development through standardized tests to conducting observational reports that track development" (Piper et al. 2013). A similar style of reporting, or structuring of data, may be useful in helping parents not only manage information regarding their children's education, but also track development. Those reports are underpinned by documentation that may include "samples of a child's work at several different stages of completion: photographs showing work in progress; comments written by the teacher or other adults working with the children; transcriptions of children's discussions, comments, and explanations of intentions about the activity; and comments made by parents" (Piper et al. 2013). This information is documented in a portfolio. To build the portfolios teachers gather three types of information: written observations, photos and work samples. These types of information that are collected align with the types of information Ms. Dennis, one of the subject matter experts interviewed, recommends that parents retain regarding their children's education.

An information management app or website designed to assist parents in managing information of their children was not identified in the searches performed for this review. Therefore, it is believed that there is still an opportunity to make a contribution to the creation of such an app or website. The majority of the websites and/or tools found via tool reviews and Google searches can be categorized as one of the following:

- web-based software application used by school districts that allows parents to keep track of their students' academic progress
- web-based school management systems
- learning community management systems that schools use for school and class organization
- apps for teachers to send announcements and other notifications to parents
- apps to organize a group, of volunteers for example, or a particular purpose or event
- apps to manage to-do or checklists

Only one tool found, MyIEPmeeting, was specifically designed to assist parents in organizing and gathering information related to the education of their children. As the name implies, the tool was designed to help parents participate in the child's Individualized Education Program (IEP) process by documenting and organizing relevant information between IEP meetings in a way that it can be easily accessed during the meeting or reported to teachers and administrators. The tool allows parents to type notes, record audio and takes pictures. From the overview it could not be determined if the app ingests data from the school information management system (IMS) or sources other than manual data entry (Excent 2014; Swanson 2012).

Table 2 lists the tools identified by category. School information management and/or learning community management systems are listed in the "standard educational information management system (IMS)" category.

**Table 2.** Education information management tools/applications

| | |
|---|---|
| Standard educational information management system | Google for Education (Teach.com 2015), Edmodo (Ponsford 2015; Teach.com 2015), SchoolMAX, Edline, Pupil Asset (Ponsford 2015) |
| Teachers publishing to parents | Buzzmob (Teach.com 2015), ClassMessenger (Teach.com 2015), Mailchimp (Teach.com 2015), ClassDoJo (Ponsford 2015), Remind/Remind101 (Klein 2013; Ponsford 2015; Teach.com 2015), Animoto (Klein 2013), Educreations (Klein 2013), What Did We Do Today (WDWDT) (Klein 2013), Aurasma (Klein 2013), Bambizo (Ponsford 2015) |
| Parent-driven information management | MyIEPmeeting (Excent 2014; Swanson 2012) |
| To-do/Checklist | IEP Checklist (Swanson 2012), IzzyTodo, SquareLeaf, Wipee List |

## 3   Objectives

This study aims to identify the types of information parents manage regarding their children, needs and challenges of parents in managing information of their children and the purposes for which parents use the information they receive. Two web-based surveys were used to collect data from parents. The first survey, Study 1, was conducted to gather information regarding the types of information parents receive regarding their children, ascertain a high-level view of what is done with the data and if there were any perceived difficulties in managing any particular type of data. The results of the first survey led to a more focused second survey, Study 2, to gain insight regarding parental use of and challenges with information received concerning their children's education.

## 4   Research Methodology

Online surveys were conducted to gather data regarding how parents are currently managing their children's information, the types of information managed, sources of the information, the context and types of information shared and the sensitivity of the

information. The surveys were also used to gather information regarding parents' perceived challenges with managing the information. Parents will be asked questions so that the areas where most challenges are perceived could be identified as areas for potential improvement. Pilot groups were identified to take the surveys initially and not only provide the data requested in the questionnaires, but also provide feedback on how the survey can be improved (i.e. identify questions that should be revised for clarity) and metrics for the time it takes to actually complete the survey. After the surveys were revised based on input from the pilot respondents, invitations to complete the survey were more widely distributed. Recipients of the invitation were encouraged to invite other parents to participate in the survey. The target audience was parents of children between less than 1 year and 18 years of age.

## 5   STUDY 1: Parental Information Management Methods and Challenges

The authors developed a 58-question web-based survey to collect feedback from parents on challenges with managing their children's educational, financial, medical, social, recreational, extracurricular and other information. The survey included a combination of multiple choice questions (with only one option to be checked), multiple choice questions (where respondents could check as many as they liked) and open ended questions. Survey participants were parents of children between 0 and 18 years of age. Ten parents were asked to participant as the pilot group for the survey. In addition to providing responses to the survey, these users were asked to provide feedback on the clarity of the survey questions so that, if necessary, the survey could be revised prior to its general release. During the trial period, the survey was only accessible by members of the pilot group, Baseline – Campus Labs personnel and persons conducting the study.

Parents were invited to participate in the survey via email. The message contained an embedded link to the survey; respondents were informed that they could access the survey by clicking on the link or pasting the URL in their web browser. In the invitation parents were encouraged to forward the survey link to other parents.

### 5.1   Demographics

Overall there were 45 responses to the survey invitation. Most survey respondents were between 31 and 50 years of age (75%). Of the remaining respondents, 11.36% were between 21 and 30 and 13.64% were age 51 or older. More than half (68.18%) of the respondents were female. The majority of the respondents (65.91%) had more than one child in their household under the age of 18. Figure 1 reflects the grade distribution of the children of the survey respondents.

### 5.2   Results

The responses to the survey confirmed that the five categories presented (educational, financial, medical, recreational/extracurricular and social) are important (Fig. 2).
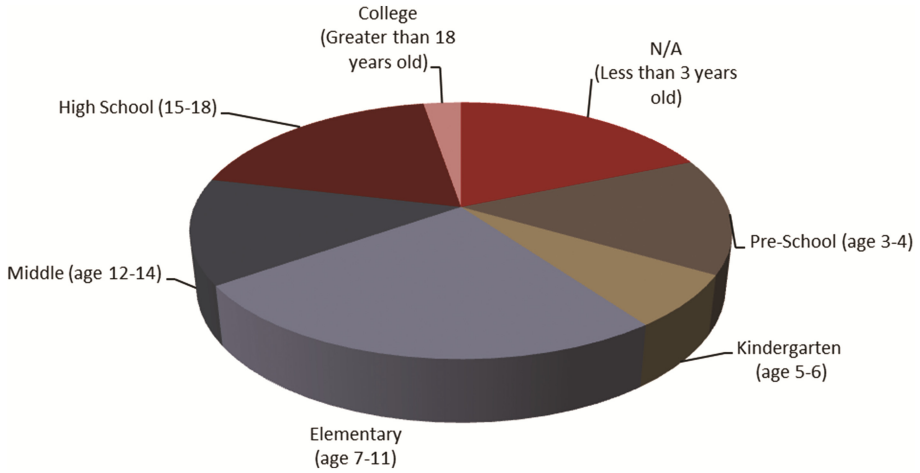
**Fig. 1.** Grade level distribution of the children of survey 1 respondents
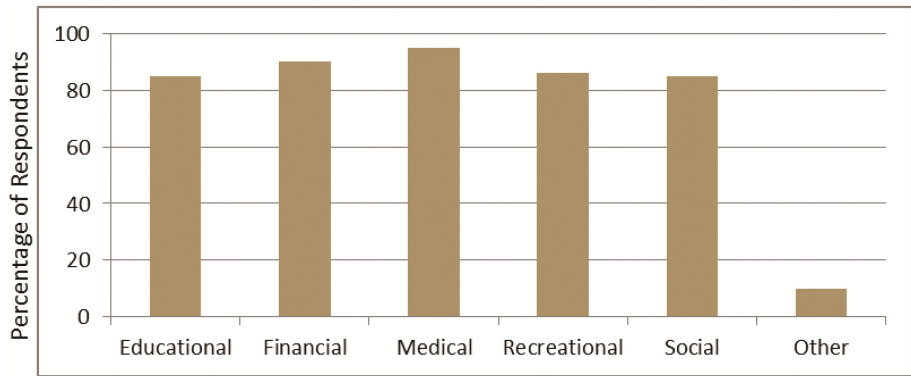


**Fig. 2.** Types of information parents manage regarding their children

Photographs and religious information were provided as additional types of information managed by two respondents.

The majority of the respondents did not report having any issues collection information about their children from third parties when needed. One respondent, however, commented that it was "hard to keep all the medical records straight […] the doctors are not always willing to share the details […] school records are better but still not great". The perceived difficulty of sorting, storing or retrieving their children's information is perceived to be low as only a quarter of the respondents (25.64%) reported having issues. The explanations provided by those who reported having issues point to problems dealing with the "overwhelming" amounts of information, the fact that so much of the information is paper-based and the fact-that several different accounts are needed to access all of the information.

Respondents receive a variety of educational information regarding their children. The most common types received were report cards, progress reports and assignments/school work. When compared with the response to the question about how much educational information they choose to save, it was evident that most received information is retained, with the exception of correspondence and meeting invitations. Responses to questions regarding the types of educational information received were separated by parents of school-aged children and parents of pre-school-aged children and are presented in Figs. 3 and 4.
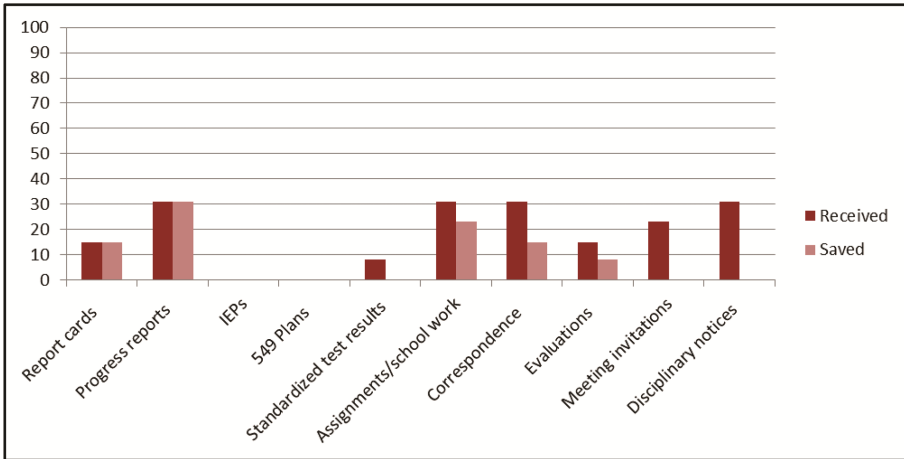


**Fig. 3.** Percentage of educational information received/retained by parents of pre-school-aged children
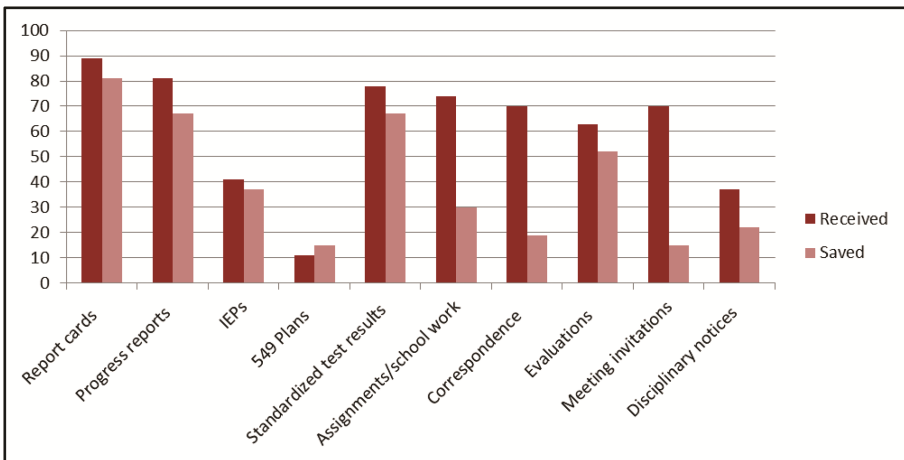


**Fig. 4.** Percentage of educational information received/retained by parents of school-aged children

Survey responses indicate that there is a mismatch between the ways parents currently receive educational information regarding their children and how they would prefer to receive the information (see Fig. 5). Approximately 80% of respondents receive this information as a hardcopy or printed report while nearly 85% would prefer to receive the information electronically. However, a significant number of parents prefer paper even when electronic options may be available; 63% of respondents preferred to receive the information in printed form.
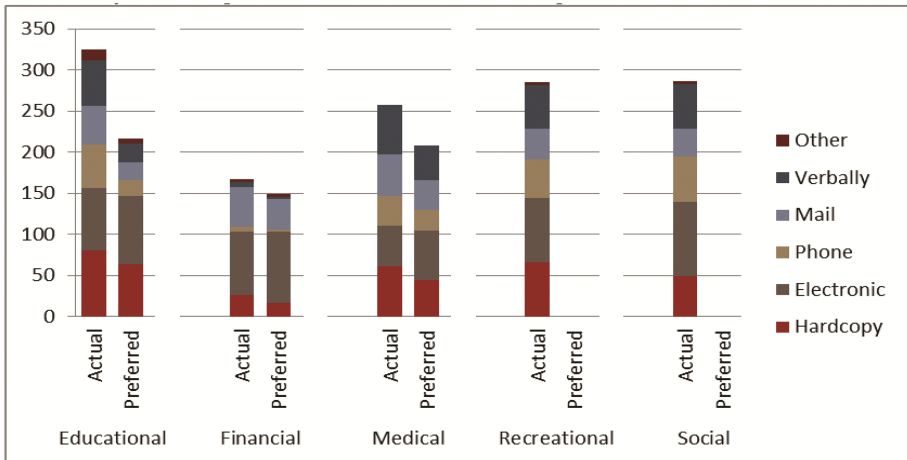


**Fig. 5.** Actual vs. Preferred methods of information receipt

Most respondents indicated that they would prefer to receive their children's financial and medical information electronically or online. Respondents were not asked to
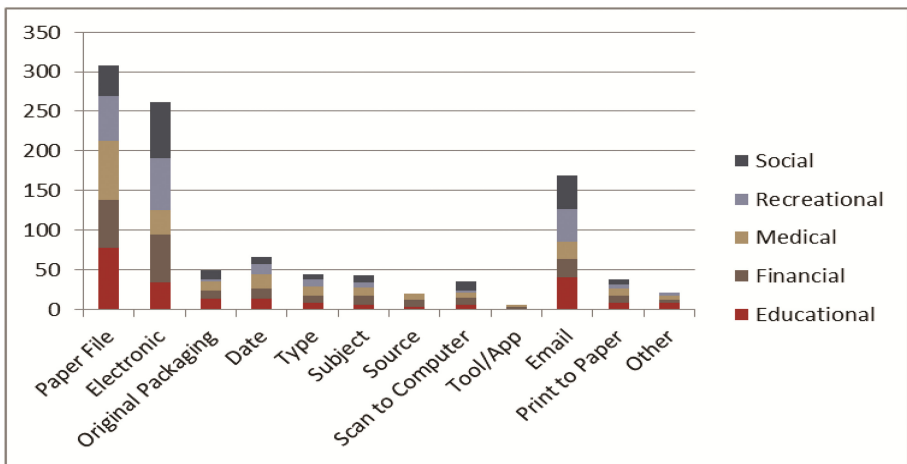


**Fig. 6.** Archive methods for received information

provide their preferred method of receipt for social and extracurricular information. Similarly to the results observed with educational information, a significant number of respondents also prefer to receive this information in hardcopy. Approximately half of the respondents keep the information indefinitely with the exception of extracurricular/ recreational information. One respondent commented that extracurricular/recreational information is not kept because it changes each year, may be an indication for why other respondents also choose not to keep this information.

Although the majority of respondents would like to receive educational information electronically, more than 80% of them use paper-based methods to save the educational information they receive. This disparity was seen across most of the information types (see Fig. 6).

## 6   STUDY 2: Parental Educational Information Management Methods and Challenges

A second web-based survey consisting of 47 questions was designed to obtain input from parents regarding their management of, perceived challenges with and usage of their children's educational information specifically. The survey included a combination of multiple choice questions (with only one option to be checked), multiple choice questions (where respondents could check as many as they liked), Likert scales and open ended questions. The survey was pilot tested to improve the clarity of questions. Again, targeted survey participants were parents of children between less than 1 year and 18 years of age.

### 6.1   Demographics

Persons who indicated in their response to the initial survey that they would be willing to provide additional input were invited to participate in the survey via email. The message contained an embedded link to the survey as well as a request to forward the
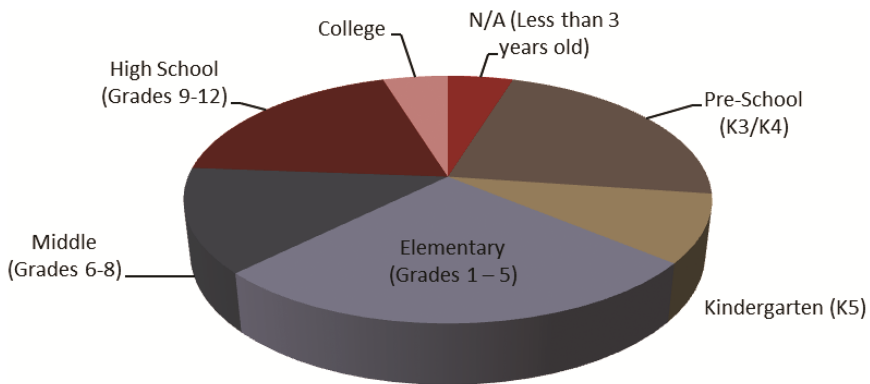


**Fig. 7.**   Grade level distribution of the children of survey 2 respondents

invitation to other parents. During the period of data collection, 46 respondents met the selection criteria for completing the survey. The age and number of children of the respondents to the second survey aligned with the first survey respondents. Figure 7 reflects the grade distribution of the children of the survey respondents.

## 6.2  Results

Questions regarding the types of educational information parents receive, what they choose to retain and for how long they choose to retain the information were re-visited in the second survey. For these areas, the survey results were consistent with those from the first survey. The top five types of education information received by parents as indicated by 60% or more respondents are report cards, progress reports, correspondence, assignments/school work and meeting invitations. These types of data are retained indefinitely by approximately 43% of parents.

Again, survey results show evidence a mismatch between the ways parents currently receive education information regarding their children and how they would prefer to receive the information. Because most parents receive information in both electronic and hardcopy forms, they were asked what attempts they have made at combining the types of data received. Approximately 41% of respondents transfer hardcopy to electronic files for storage. However, 43% of respondents transfer electronic information to hardcopy for archive. Responses to questions regarding actual and preferred methods of information receipt and archive methods received were separated between those from parents of school-aged children and parents of pre-school-aged children and are summarized in Figs. 8 and 9 below.
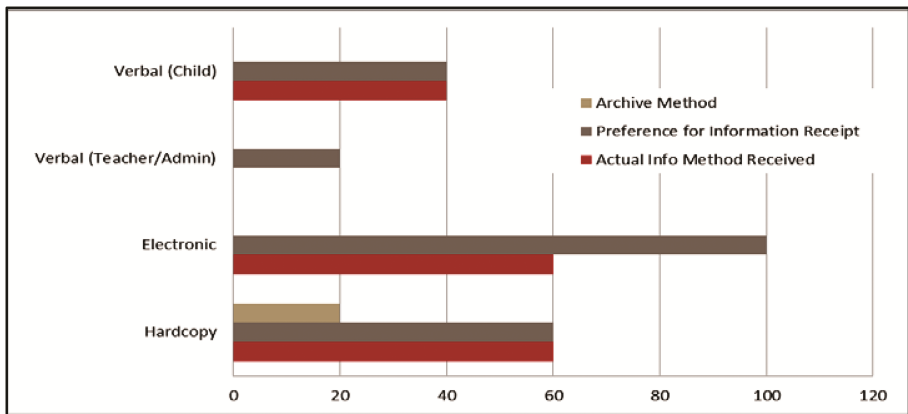


**Fig. 8.** Actual and preferred methods of educational information receipt and archive method of parents of pre-school-aged children
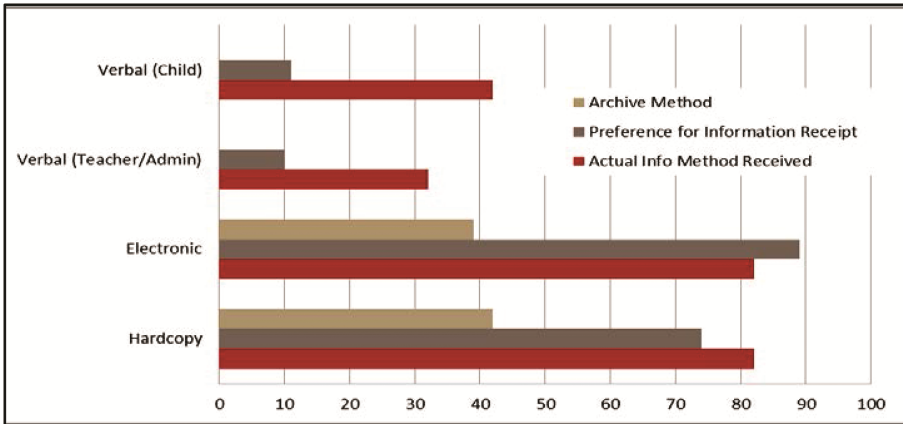
**Fig. 9.** Actual and preferred methods of educational information receipt and archive method of parents of school-aged children

An education management system (ex. ParentCONNECTTxp, SchoolMAX, Edline, etc.) is available to approximately 67% of the parents surveyed. The overwhelming majority, 90%, of parents use the available education management system. When asked what they liked most about the available education management system, 55% of parents stated the availability, 18% liked the ease of use and 14% noted the quality of the content. When asked what they liked least about the available system, 36% reported that there was not anything they did not like. This was the number one response. Other responses indicated that parents perceived that the system was difficult to use (18%), they disliked the login/password requirement (18%) or they were dissatisfied with the quality of the content (14%).

Interestingly, 55% of parents perceive their children's educational information to be very sensitive and should be shared or accessed via secure means by authorized individuals only. However, most respondents (93%) share the information verbally or via email (43%). Most respondents share their children's educational information with family (71.88%) and educators (56.25%) for the purposes of sharing accomplishments (71%) or describing an issue (75%). There is no perceived difficulty in determining what information to share.

When asked what is done with received educational information, parents indicated that in general they either save the information and take additional actions (82%) or provide the requested response (66%). The top four actions taken, as indicated by 60% or more respondents are to contact the educator (82%), provide additional help to the child (80%), reward or reprimand the child (77%) or provide the requested information or item (61%). Responses to questions regarding the types of information received and retained are summarized in Figs. 10 and 11 below.
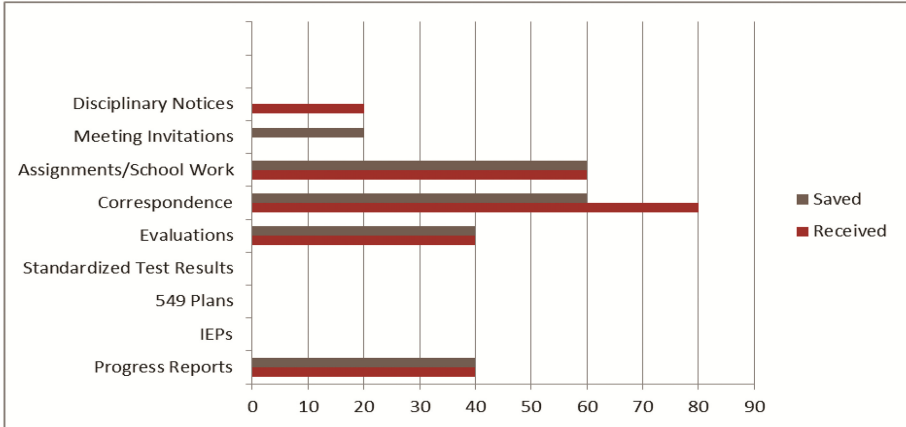
**Fig. 10.** Percentage of educational information received/retained by parents of pre-school-aged children
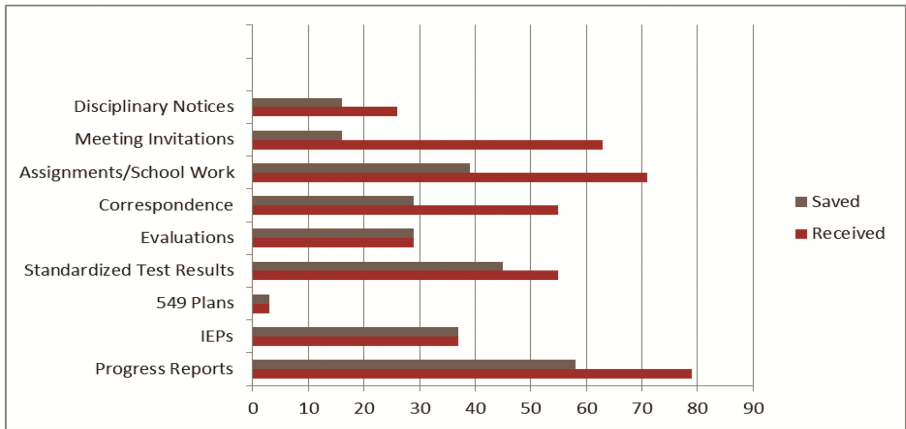


**Fig. 11.** Percentage of educational information received/retained by parents of school-aged children

The most prevalent methods of communicating with their children's schools as indicated by 50% or more respondents are via email (86%), in person (77%), verbally over the phone (68%) or via written notes or letters (57%). The majority of respondents do not perceive any issues communicating with the school. The top four purposes for which parents save educational information regarding their children as indicated by approximately 50% or more respondents are: use as supporting documentation when communicating with educators or others, to assist child in reviewing/studying material or as a teaching tool, show progress or decline in development and/or skill and as a memento; to remember a child's accomplishments at a particular age or grade.

A set of the survey questions were designed to ascertain the methods used by parents to organize the educational information and the amount of effort parents were willing to dedicate to improving management of their children's educational information. Although the perceived level of difficulty in finding saved educational information when needed was low, less than 10% of parents reported having issues in this area, 90% of parents indicated a willingness to dedicate some amount of time to organizing the educational information in effort to improve effectiveness in finding the information when needed. Of the respondents, 43% are willing or able to dedicate less than one hour per week to organizing the received information, but 48% indicated that they would be willing to dedicate more than one hour per week. Specifically, majority of parents (67%) expressed a willingness to document the following information for each piece of educational information saved; date, source, category and description for items categorized as 'Other' (Fig. 12).
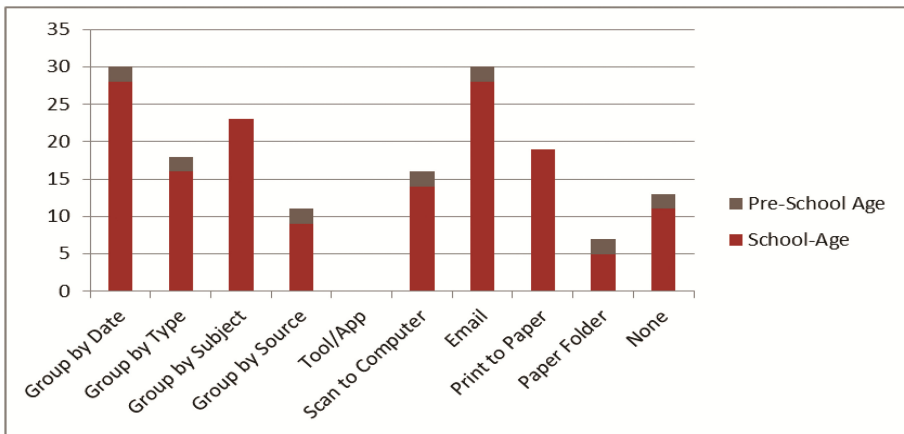


**Fig. 12.** Current organizational methods of respondents

## 7    Technical Solution and Future Research

A web portal/site for parents to use to manage information regarding their children's education will be developed. The basic web portal design will be based on functionality available in education management systems currently in use in Maryland public schools. SchoolMAX used in PG County Schools and ParentCONNETxp used in AA County in particular will be referenced. The features and functionality that differentiate the developed web portal/site from the existing school web-based software applications, however, are the additional pages, graphs and reports that are focused towards the needs of parents. The results of the studies will be used to create a list of information management needs of parents. The list of needs will be used to derive requirements that will drive the design of a technology solution to assist parents in the management of information regarding their children's education. This site will have four primary functions: monitoring, retrieving, communication and decision making. The monitoring function will enable

the viewing of information provided/uploaded by the school via the site and enable the storage and viewing of educational information provided outside of the school's site. The retrieving function will allow parents to retrieve information regarding their child's education when needed. The communication function will enable allow parents to correspond with teachers and educators. The decision making function will allow parents to observe trends and anomalies in educational development.

Methods to integrate educational information received by parents will also be further explored. A study will be conducted where parents will be asked to complete tasks related to making decisions regarding their children's education using current methods and the new web portal tool. The results of the study will be used to determine where technology provides the most improvement in the effectiveness of parental information management.

## 8    Conclusions

The results of the first survey confirm that parents must manage are large volume of information regarding their children. The majority of issues related to this information management are associated with educational and medical information. Overall parents feel that the information regarding their children that they manage is sensitive, therefore privacy concerns must be considered when designing solutions to assist parents in managing this information. Per the survey results, few information management tools are used to manage the data in its categories.

Per the second survey results, no information management tools, outside of the educational management systems provided by the schools, are used by parents to manage the educational information of their children. Although the perceived difficulty with organizing educational information is low as indicated by survey responses, the willingness of the majority of participants to dedicate time each week to increasing the effectiveness of their current situation indicates that there is room for improvement.

With a better understanding of how parents receive and share information regarding their children as well as the purposes for which parents use the information technology can be developed to improve parental monitoring of the progress of their children, enable parents to identify of trends and anomalies in their children's development and improve the effectiveness of communications with providers and educators. The use of such technology by parents would enable them to get the most out of their position of influence as a major contributing factor in the development of children.

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